The Builder.

No. CLXII.

SATURDAY, JANUARY 10, 1846.

OUR readers are aware that the Act prescribes that stone stairs, when used internally in dwelling-houses, must be wholly supported by "fire-proof constructions, and must be connected internally by landings, the floors of which are fire-proof and wholly upborne and supported by fire-proof constructions, and must be connected with the exterior entrance by passages, the floors of which are fire-proof and wholly borne up and supported by fire-proof constructions."

Mr. Taylor, of Pimlico, a mason, had prepared and partly fixed, in ignorance of this regulation, a stone staircase, whereof the steps were wholly supported by fire-proof constructions, but which had landings and passages formed in the ordinary manner, with fir joists and deal boarding. The district-surveyor rightly considered himself bound to require that these latter should be fire-proof also; and as no preparation for this had been made, the case was submitted to the referees. Their award was:—

"That it will be contrary to the Metropolitan Buildings Act to make the floor of the passage intended to connect any stone stairs in a dwelling-house with the exterior entrance thereof, or the landings by which such stone stairs are to be connected in the several stories, in such manner that they will not be fire-proof, and, as well as the stairs, wholly upborne and supported by fire-proof constructions; and, in compliance with the request of the surveyor of the district, we, the said official referees, do hereby direct that, in the present case, the passage from the entrance-door to the foot of the stairs, which have been already fixed, be rendered fire-proof; which may be done by means of a sufficient cast-iron girder from the front wall, to and over the cross wall, or to and upon a sufficient pier of brickwork, or an iron column, at or near to the foot of the basement stairs, and so disposed that the end of the curtail step of the flight from the ground floor story may rest upon it; such cast-iron girder being laid at or within the line of the passage-partition, so as to assist the party-wall in carrying such requisite fire-proof floor: but inasmuch as the said James Taylor has incurred the expense of providing, preparing, and partly fixing a stone staircase, without providing the means of forming properly supported landings to connect the stairs between the several stories, and such proceeding having been taken in ignorance of the intention and effect of the statute, and having especial regard to the size of the house in which the said stairs are to be used, we, the said official referees, are of opinion that the surveyor of the district will be justified in permitting the upper landings to be executed as proposed."

Some time ago, when a statement of a similar, if not the same case, was laid before us,* we said the regulation in question, which permits a builder to make his stairs, landings, and approaches wholly combustible, but will not allow him to render them in *part* fire-proof, was anomalous.

That the same opinion is entertained generally, seems to be evidenced by the fact, that the referees have commenced the above award by stating, it appears to them, "that the intention of the rule quoted in the said requisition is, that when stairs in dwelling-houses are of stone, or other incombustible substance, there shall be the reality, as well as the appearance, of secure means of escape from such dwelling-house in the event of fire, by requiring the landings connecting the several flights of stairs in the several stories of a building, and the floor of the passage connecting the stairs with the exterior entrance of any such building to be fire-proof, and, as well as the stairs, to be upborne and supported by fire-proof constructions trustworthy in the event of such calamity; and having regard to the consideration, that people are not liable to be deceived by wooden staircases, but that they are liable to be deceived by the appearance which stone stairs present, when these are not properly upborne and supported, and are not properly connected throughout, and with an exterior entrance by like sufficient and secure constructions," they awarded as before recited.

There is no doubt that this is the motive of the clause; we cannot, however, consider it a sufficient one, and trust the regulation will not be allowed to escape revision. It cannot be denied, that fire-proof landings and accesses to stairs are very desirable, and if the provision referred to were likely to lead to the more constant introduction of such, the objection to it would be weaker. We feel satisfied, however, that this will not be the case, but that it will lead to the disuse of stone stairs altogether, excepting in large and costly houses, where the regulation would generally have been complied with if it had not existed. Stone stairs are now often put up in houses of middling size, wholly upborne by fire-proof constructions, and useful so far as they go, in more ways than one. But in few cases are the accesses and landings so also, as a different arrangement is required in order to effect this, and great additional expense must be incurred.

Surely, it is better that there should be *partial* means of getting safely down a building on fire than that there should be none.? And there is further this most important consideration, that wooden stairs materially aid in communicating fire from one floor to another. As to the notion that persons "are liable to be deceived by the appearance which stone stairs present," and so are led to make no other provision for escape, this really goes for nothing, since it is well known that nine hundred and ninety-nine persons out of every thousand, whether with wooden or stone stairs in their houses, never make any previous arrangement at all for escape, or give the matter a thought until it be too late.

* Vol. III. p. 584.

Houses commenced before January 1st, 1845, at present unfinished.

THE following is a copy of the circular to which we referred in our last, addressed by the registrar to the district surveyors, on the 1st of the present month:—

"With respect to buildings commenced before the 1st January, 1845, and remaining incomplete on this day, the 1st January, 1846, I beg on the part of the official referees and myself, with a view to relieve, in some degree, the doubts and apprehensions of persons interested in building, as to the application of the Metropolitan Buildings Act to such buildings, to inform you, in common with the other district surveyors, that the official referees are of opinion,—

1st. That if such buildings (whether within the limits of the former Building Act, 14 Geo. III. c. 78, or the new districts created by the present Metropolitan Buildings Act) be structurally complete, that is to say (in the language of the 77th section), if the roof be covered in, and all the walls be built to their full heights, and the principal timbers and floors fixed in their places, you will be justified in considering that the Metropolitan Buildings Act will not extend to the original erection and completion of such buildings.

2ndly. That if the structure of any such building within the limits of the former Building Act, 14 Geo. III. c. 78, have been executed in compliance with that Act, then you will be justified in considering that so much of any such structure as may be already executed will not be affected by the Metropolitan Buildings Act, but that whatever may remain to be done in or to such buildings on this day (so far as it can be done without demolishing any part of the structure), should be done in compliance with the rules, provisions, and directions of the Metropolitan Buildings Act. But,—

3rdly. As it regards such buildings within the metropolitan district in those parts which were not within the operation of the Act 14 Geo. III., the official referees feel that they can suggest no general rule applicable to such buildings, but that every case must necessarily rest upon its own merits."

CONSTRUCTION OF TERMS STREET AND ALLEY.

A correspondent writes: "In THE BUILDER of the 27th instant (page 618, Vol. III.), 'Construction of the terms, street and alley,' it is reported, that the referees decided, that the houses could not be built unless *a road* forming the approach, be at the same time made of the statutable width.

This award certainly does not set at rest the question, whether a street must have two entrances, because, had the referees intended to have put this construction on the Act, they would most assuredly have said *roads*."

With reference to this point, we may state, that the referees have decided by another award, that the Act does *not* require two entrances for a street, although it does for an alley. The case briefly was this. Mr. Scarth desired to build some houses on a piece of land adjoining the vicarage garden at Fulham, and proposed to form a road in front of them, 24 feet wide, from the wall of the vicar's garden, with *one* entrance only, of the same width.

The referees determined, "that inasmuch as the buildings in question are to be built at a greater distance than 20 feet from the boundary of land belonging to the owner of such buildings, and in the same occupation therewith; and there are no buildings within a distance of 20 feet from such boundary, on the other side of such boundary, it will not be contrary to the said Act to build the houses in question in the situations shewn."

A title-page, *in colours*, has been printed for the volume lately completed, and may be obtained, on application at the office, by those subscribers who may prefer it to the plain title-page, distributed last week with the index.

NEW WORKS AT THE POST OFFICE.

IN order to obtain additional accommodation at the Post-office, St. Martins's-le-Grand, two new rooms, of large size, have been formed for letter-sorters over a part of the present building, under the direction of Mr. Sydney Smirke. As the span is considerable, and it was desired to occupy as little space with the floor as possible, a series of iron arches has been introduced, to support at the same time the roof and (by means of suspending rods) the timbers of the floor. The construction being novel and ingenious, we shall shortly illustrate it in detail.

COLOUR IN INTERNAL DECORATION: QUESTIONS AFFECTING ITS TREATMENT.

Among the arts, which minister to the comfort and delight of man, a returning influence is at length apparent in the arts of design. A knowledge of the origin and applications of forms, in the works of architecture, or of decorative art, is accompanied by a sense of their influence towards emotions of delight. The rules of art have become recognised, and their dictates in the arrangement of lines and proportions, for the production of the beautiful, are valued and understood. An increasing taste for internal decoration is extending from public to private buildings, in which the resources of colour are appealed to.

It is, therefore, important that the laws and circumstances, appertaining to this element of beauty, should be exactly comprehended. The art of chromatic decoration is one which demands the attention of the scientific artist. In England, it has long been left to the doubtful taste of the compounder of pigments, as too easy and unimportant for the attention of architect or painter. It has, therefore, long been the servant of fashion, irrespective of any influence from rules of art. But, it must now be felt, that the successful management of colour in interior decoration is one of the most important qualifications necessary for an artist. While it demands the exercise of great skill, it is capable of explanation on fixed principles. A knowledge of these principles is highly essential to the architect, whose design may be entirely negatived by the mode of treatment adopted in those minutiæ, which custom has left to the upholsterer, and the cabinet-maker, but, which should undoubtedly play as important a part in the design, as they do in its effect, when carried into execution. With many and often conflicting circumstances, perfection in the treatment of colour may never be attainable, yet, in any position, in this or other departments of his art, it will be the aim of the artist to choose that course, to which objections are of least weight. Opposing circumstances there have always been to every effort of art, but some of the greatest works have arisen out of these very obstacles. But a main argument in favour of the architect's acquiring this knowledge is the obvious fact, that *he* is best able to work out his own design, in accordance with the style and character, which he has intended to exhibit.

The object of this paper is rather to suggest certain considerations affecting the treatment of colour, than to enter into all the varying circumstances of its particular application. We venture to state it as an axiom, that colour should never preponderate over form. Some few years ago, the only colours used were those which approached nearly to a neutral tint. Efforts in positive colour were unsuccessful, and, therefore, refuge was sought in negation. Now, in one class of buildings, there is, perhaps, a tendency towards excess of positive colour, not always employed solely with artistic views, but with the object of symbolic meaning, which has lately crept into designs for churches. Form, and light and shade are the most important elements of beauty, as they are the most important to be acquired by the artist: a profusion of dark colour is likely to annul the effect of form by hiding the shadows. Decoration in colour will fail to satisfy, unless it be secondary to relief or decoration in form. Vivid colours are not necessarily objectionable in all cases; they may be combined so as to produce a very beautiful effect.—Amongst other results of appropriate decoration, it may not be out of place to allude to the influence of colour in promoting health and pleasure of mind. An apartment decorated in harmonious colours is likely to reflect upon the mind, and induce a cheerful and healthy state. The use of the apartment may be at once expressed, and corresponding emotions called into exercise.

We thus see, that the harmony of colours, or their laws of combination, require to be attentively examined, in order that those colours may be used which look best in juxta-position, that all may combine towards one result. Chromatic decorations, not designed on such principles, may, perhaps, be likened to one of those perambulating bands, just now heard at night time, in which each performer plays his own tune, careless of the resulting discord.

The analogy between colour and sound need only be alluded to. In chromatics, there are three fundamental colours, as in music there are three notes, the foundation of all harmony. By the union of any two of these colours, and by the combination of the three, the number of distinct colours is increased to seven, corresponding to the seven notes in the complete musical scale. It was discovered by Buffon, that if we look steadily for a considerable time at a spot of any colour, placed upon a white or black ground, it will appear to be surrounded by a border of another colour. This colour will always be that which makes up the triad, or combination of those primary colours, present in every harmonic combination. That is to say, the three primary colours, being yellow, red, and blue; if the spot be red, the border will be green, which is composed of blue and yellow, and, in like manner, in the other cases. Now, a similar result takes place in music. When any given note is sounded on an instrument, it is always accompanied, or succeeded, by those which form a chord, and are termed in music the harmonics. This phenomenon in acoustics is most perceptible in the sound of a bell in succession.*

It will thus be understood, that the combinations of colours are regulated by principles, which it is essential clearly to understand. The mode in which the secondary and tertiary colours are produced, will be best explained in a tabular view:—

Three Primary Colours.	*Three Secondary. Colours.*	*Three Tertiary. Colours.*
YELLOW = 3		
	ORANGE = 8	
RED .... = 5		russet .. = 21
	PURPLE = 13	
BLUE.... = 8		olive.... = 24
	GREEN.. = 11	
YELLOW = 3		
	ORANGE = 8	
RED .... = 5		citron .. = 19
	PURPLE = 13	
BLUE.... = 8		russet .. = 21
	GREEN.. = 11	
YELLOW = 3		olive.... = 24

The harmony of colours is that compensating power, upon the management of which depends the effect of every composition. Thus, referring to the table, yellow is neutralized by purple, when the proportions are 3 of the first to 13 of the latter=16. Red is neutralized by the other two colours combined, viz., green. In like manner with blue, as also in the reverse direction, the neutral combinations being at 16. These numbers may be considered the measures of quantity or intensity, in combination. The same relation exists between the tertiaries and secondaries, as between the secondaries and the primaries, the neutral combination being at 32. Thus orange is neutralized by olive, and green by russet. This, then, is harmony, or contrast; for by the latter is meant that complimentary arrangement or harmony, which is necessary to the full development of each colour.—Besides this harmony of contrast, colours have a relation to each other, which may be called the harmony of succession, or melody. For example, red is melodized by the orange on one side, and the purple on the other. Their use is to promote the union between the principal colours.

The term hue is applied to compound colours, and expresses the gradation towards each preponderating primary colour. By tint is understood the gradation of a colour, or hue from its perfect state up to white, and by shade, a similar gradation in an opposite direction, down to black. Colours in combination must correspond in tint, hue, and shade. Any tint placed in contrast with shade must recede towards white, in the same ratio as the shade towards black.† The general tone of warmth or coldness must be maintained through the whole apartment. Colours are warm or cold, as they partake of the nature of red or blue. Yellow holds an intermediate position, but having an inclination rather towards warmth. There must be a principal colour, or key-note, which must run through the whole composition, and must accord, as just stated, in hue, tint, shade, and warmth or tone; and it is the correct fulfilment of these provisos, which is in fact the melody, or harmony of succession.

These general principles being arrived at, the question which next arises is, how they can be best applied to particular cases. The first step is to consider what may be the key-note, or general tone of the composition. If the apartment be already furnished, it must generally be determined by the furniture; but if, as here considered, the whole room takes part in the arrangement, it will, as in all cases, be the best course to begin the inquiry in a different manner.

The first question then is:—

1. *Climate.*—In this respect, circumstances of temperature and light, in this country, would lead us rather to choose a warm style of colour, and a light tone. In the Pompeian rooms, where light was abundant, many of them being unroofed, the mural decorations contained much positive black.

2. *Season of the year.*—This is a question which will but seldom arise, for there are few houses in this country, that alike are not occupied in the summer as in the winter, and which *have* separate rooms for the different seasons of the year. Yet in any habitation, or apartment designed for occupation at a particular season, the points of light and warmth must be considered, in the decoration of the rooms, as much as the nature of the ground chosen for building upon.

3. *Town or country.*—In towns, a warm tone will generally be more satisfactory, and in London, light colours seem to be more needed than in the country, where, comparatively, there is abundance of light.

4. *Aspect of room.*—This, and the next position, are the most important influential agents in the choice of the key-note. A warm tone would be as objectionable in a room with a southern aspect, as a cool tone in one which faced the north. Any aspect ranging between east and north-west is better with warm colours; blue, and all colours into which it enters in combination, should be avoided.

5. *Mode of lighting room.*—This will materially influence the choice of tone. The position and size of the windows will regulate the amount of light and shade; and the latter will materially alter the colours beneath it. Where the light is strong, the tone of colouring may be full; where there is a deficient supply of light, the tone of colouring should be light. If the apartment will be much used by artificial light, it becomes necessary to consider what effect that mode will have upon the colours. Emerald green will be the only hue of that colour that can be adopted; and purple, though pleasing by daylight, by night will appear like black; yellow will approach in tone towards white, and white towards yellow. The objection does not apply to the colour of gilding, as that is not positive yellow. A room, used by artificial light, should be light in tone.

6. *Size of the room.*—In this point, it must be considered, whether it is desirable that the room should appear larger than it really is. Full-toned colours lessen the apparent size of a room, whilst light colours enlarge it.*

7. *Use of the room.*—This is the most important consideration of all. The decorations general and particular, should be expressive of the purpose. In libraries we desire an air of quiet and repose; in dining-rooms, richness and comfortableness; whilst in drawing-rooms, vivacity and lightness. Entrances should be lower in tone than the rooms to which they lead, in order that the most important part of the house may strike with full effect. In picture-galleries, it becomes necessary to consider what will contrast best with the pictures.

8. *Individual taste.*—Although we deprecate a return to the caprices of fashion, it seems necessary in some degree to consider individual taste. Peculiar states of the organ are known in many individuals to raise positive antipathy to some kinds of colour; whilst many derive extreme pleasure, if the sight is met by a preponderance of green.

From these considerations, the general tone and the principal colour are decided upon. In every branch of art, the necessity for leading forms and colours is evident. In Gothic architecture, we have principal lines, which are vertical; in Grecian architecture lines which are horizontal. In historical painting, we find a principal group, a principal figure, a principal light, and a principal colour, the key-note of the composition, and to the importance of which all other ingredients are subservient. The principal colour should not overpower the rest, neither should it be confined to one spot, as the carpet of a room, or the walls, but

* Vide "The Laws of Harmonious Colouring," by D. R. Hay.

† Hay "On Colours."

* Vide a series of papers on decoration in the "Athenæum" for December, 1843.

should be evidently a part of a whole composition. We have already indicated the mode of finding the colour of combination. There are many other points to be considered, the most important of which affect the variations, which it may be necessary to make in the colour of combination, either by variation of hue, or by the introduction of melodising colours.* It should be recollected that a lively style of colouring should, in many cases, be preferred to a sombre; but that in rooms devoted to festivities, the decoration should not be so excessive as to nullify the dresses, and ornamental accessories of the occasion. Variety is, in fact, the foundation of pleasing arrangement of colour.

The subject of colour might be considered at much greater length. We have here endeavoured to set forth the previous considerations, which it is necessary to meet:—the mode of applying particular colours, in combination with each other, with their comparative powers and intensities, along with the propriety of materials, and their imitations, must be left for a future opportunity, or for the investigation, which we have endeavoured to direct. E. H.

THE BURSTING OF A CAST-IRON TANK,

AT THE LIVERPOOL AND HARRINGTON WATER-WORKS.

Amongst the numerous and fatal accidents that are daily occurring to keep the public mind in a state of feverish excitement, that which took place at the Liverpool and Harrington Water-works, on the 25th of December last, is the most extraordinary in its character and consequences that has come under consideration for a great number of years. We allude to the sudden and unexpected rupture of a cast-iron tank or cistern, by which several houses were demolished, five human beings hurried into eternity, and eight others dangerously bruised and mutilated. This cistern was one of uncommonly large dimensions, said to be capable of containing 200,000 imperial gallons, or upwards of 32,000 cubic feet of water, a quantity which, when compared with the average supply of the principal London companies, is amply sufficient for the accommodation of more than 1,100 tenements, or about three times the number of houses in the Strand of London. This simple statement will serve to give the practical reader a more correct and comprehensive idea of the immense size of the vessel, than any thing that can be advanced in reference to its linear dimensions and cubical contents.

The tank was of an oblong or rectangular prismatic form, and according to the evidence of Mr. Howell, under whose superintendence it was constructed, its length was 71 feet, width 24½ feet, and depth 20 feet; other dimensions have been given, but as the individual just mentioned made the drawings, and furnished the various details for the construction, we are justified in giving the preference to the data which he has supplied to us. A rectangular vessel for the retention of water under a high head of pressure, is the very worst form that could be chosen for the purpose; its adoption in any case is highly objectionable, and betokens great ignorance of the fundamental laws of fluid action; but in the present instance, where the failure has been attended with such disastrous results, it entails a fearful responsibility on the parties by whom the vessel was erected. There are, it is true, some extenuating points in the case, for it appears from the evidence of Mr. Thompson, the manager and chief clerk of the Liverpool and Harrington Water-works, that the foundation was prepared by the Harrington Company themselves, but under the constant superintendence and direction of Mr. Howell; this circumstance frees the other party from blame, in so far at least as form and situation are concerned, but nothing can be admitted as a palliative for the want of strength in the materials, or an excuse for the imperfections of workmanship, the one or the other of which must have led to the catastrophe. There can be no doubt about the matter, for if the materials were of such a quality and strength as to sustain the estimated pressure with safety, then the natural inference is, that the workmanship was defective; and, on the other hand, if the workmanship was such as to answer all the purposes for which it was intended, then the obvious conclusion is, that the materials were either imperfect in structure, or deficient in the estimated strength. The probability, however, is that both were faulty, and that the effect of fluid pressure had not been properly considered, according to the established laws of hydrostatics.

Taking the dimensions as elicited from the evidence of Mr. Howell, and assuming them to be the correct internal measurements of the vessel, the rules of mensuration give—

$$71 \times 24\tfrac{1}{2} \times 20 = 34790 \text{ cubic feet for the contents of the tank;}$$

and this, when estimated in imperial gallons, becomes—

$$34790 \times 1728 \div 277{\cdot}274 = 216814 \text{ gallons.}$$

The estimated content of the vessel, from which the pressures appear to have been severally deduced, is 200,000 gallons; being in defect of the true contents by a quantity not less than 16814 gallons. But, according to the evidence, the rupture took place when the vessel was filled to the depth of only 17 feet, in which case the cubic content was only 29571½ feet, or 184293 gallons; differing from the total contents by 32521 gallons; a very important difference, indeed, as regards the effect of the pressure induced by it on the upright sides of the containing vessel.

The following are the chief principles of fluid pressure which are more immediately involved in the inquiry; they are given here with the view of placing them directly under the eye of the reader, and saving the trouble of referring to books on hydrostatics, where they are severally demonstrated and treated in a more scientific manner:—

1. When a non-elastic fluid is at rest in a vessel whose base is horizontal, equal parts of the base are equally pressed by the fluid.

2. All the parts of a non-elastic fluid press equally at the same depth.

3. The pressure of a non-elastic fluid at any depth is directly proportional to that depth.

From these properties we infer, that the pressure of a non-elastic fluid on a horizontal plane, is equal to the weight of a column of the fluid, whose base is the area of the plane, and altitude equal to the depth of the plane below the upper surface of the fluid.

4. When a non-elastic and quiescent fluid is urged by its own weight, it presses equally in all directions, whether upwards, downwards, horizontally, or obliquely.

5. When a non-elastic fluid is at rest in an upright rectangular vessel, the whole weight of the fluid, or the pressure on the bottom, is to the pressure on the upright containing surface, as the area of the bottom is to half the area of the upright surface; or to the area of one side and one end of the vessel.

6. The pressure of a non-elastic fluid against any upright surface whatever, is equal to half the weight of a column of the fluid, whose base is the surface pressed, and altitude the same as the altitude of that surface; or it is equal to the weight of a column of the fluid, whose base is the surface pressed, and altitude equal to the depth of the centre of gravity of that surface, below the upper surface of the fluid.

7. The pressure of a non-elastic fluid on a surface any how placed in it, whether perpendicularly, horizontally, or obliquely, is equal to the weight of a column of the fluid, whose base is equal to the surface pressed, and altitude equal to the depth of the centre of gravity of that surface, below the upper surface of the fluid.

These are the several hydrostatic principles that come into operation in this and similar inquiries; they have long been familiarly known to mathematicians and philosophers, and are duly appreciated by practical men generally, for the great usefulness in the proper conduct and management of water; yet here is an instance in which these well-known and established laws, as well as the rules deduced from them, notwithstanding their simplicity and great practical utility, appear to have been altogether neglected, if we are allowed to judge from the failure of the vessel itself, and from the evidence of those individuals who were examined as to its cause. The following calculations will prove our position.

If the tank were full of water to the depth of 20 feet, the total pressure upon one of its upright sides would be equivalent to the weight of 14200 cubic feet of water; for by the rules of mensuration, we have

$$71 \times 20 = 1420 \text{ square feet of surface,}$$

and by the sixth hydrostatical principle, the pressure on that surface is

$$1420 \times 10 = 14200 \text{ cubic feet,}$$

or when expressed in pounds avoirdupois, it is

$$14200 \times 62\tfrac{1}{2} = 887500 \text{ lbs.}$$

This gives an average pressure of 625 lbs. upon a square foot of surface, or 4·34 lbs. to the square inch; but at the instant of fracture, according to the evidence, there was not more than an average pressure of 3½ lbs. to the square inch, shewing a culpable deficiency in the strength of the vessel compared with what it ought to have been in the case of perfect safety. It is moreover stated, that at the instant of fracture, the vessel was only filled to the depth of 17 feet, and this is said to be equivalent to a weight of 750 tons; now, at the depth of 17 feet, the cubic contents, as we have already seen, is 29571½ feet, for by the rules of mensuration, we have

$$71 \times 24\tfrac{1}{2} \times 17 = 29571{\cdot}5 \text{ cubic feet;}$$

and because a cubic foot is equivalent in weight to 62½ lbs. it is

$$29571{\cdot}5 \times 62{\cdot}5 \div 2240 = 825 \text{ tons.}$$

Here, then, the difference between the estimated weight at the time of fracture, and the actual weight, according to the dimensions, is 825—750=75 tons in defect; now, to what cause can we attribute these glaring discrepancies, but to a total neglect of the rules of calculation; a neglect for which practical men in general are highly to be censured, but more especially when the calculations are of such a simple nature as to come within the reach of all. If we calculate the mean pressure at the depth of 17 feet, we shall find it to be 3·69, or 3·7 lbs., a result which agrees more nearly with the evidence than any other statement that has yet been examined. The whole weight of the water in the tank when full, would be 970·7 tons, and this is equivalent to the pressure on the bottom of the vessel, as appears from the first of the preceding hydrostatic principles.

It has been shewn above, that the pressure on one side of the vessel when full, is 887500 lbs., or 396·2 tons; but since water presses equally in all directions, by the fourth hydrostatic principle, the same amount of pressure is transmitted to the opposite side, so that the whole amount of force tending to burst the vessel transversely, is $396{\cdot}2 \times 2 = 792{\cdot}4$ tons; and this is the force which has to be provided against in estimating the strength of the materials.

Again, by the rules of mensuration, the area of one of the upright ends of the vessel is $24{\cdot}5 \times 20 = 490$ square feet, and according to the sixth hydrostatic principle, the pressure on that area is equivalent to the weight of 4900 cubic feet of water, or 306250 lbs.; consequently, the pressure on both ends is $306250 \times 2 = 612500$ lbs., or 273·43 tons; and this is the force which tends to burst the vessel longitudinally, one-half of it acting in each direction. The whole pressure on the upright surface of the vessel is, therefore, $792{\cdot}4 + 273{\cdot}43 = 1065{\cdot}83$ tons; the total pressure on the upright surface and base together, being $1065{\cdot}83 + 970{\cdot}7 = 2036{\cdot}53$ tons. The total pressure on the upright surface, however, may be obtained more readily as follows:—

$$\overline{71 + 24{\cdot}5} \times 20^{2} \times 62{\cdot}5 \div 2240 = 1065{\cdot}83 \text{ tons, as before.}$$

But the amount of pressure on the same upright surface may also be determined in a manner somewhat different, by the application of the fifth hydrostatic principle, for the whole area of the upright surface, is

$$71 + 24{\cdot}5 \times 40 = 3820 \text{ square feet, and the half of this is } 3820 \div 2 = 1910 \text{ square feet;}$$

but the area of the bottom is $71 \times 24{\cdot}5 = 1739{\cdot}5$ square feet, and we have already seen that the pressure on it, or the whole weight of water in the tank when full, is 970·7 tons; hence it is $1739{\cdot}5 : 970{\cdot}7 :: 1910 : 1065{\cdot}83$ tons, the same as before.

* On the subject of colour, as adapted to interior decoration, consult, Hay "On Harmonious Colouring, adapted to Interior Decoration," Field's "Chromatography," Field's Chromatics," "Athenæum," Dec., 1843.

These different methods of obtaining the same result may prove valuable to some of the less scientific readers of THE BUILDER, by shewing them in what manner the fundamental principles of hydrostatics are to be applied in this and all similar inquiries.

So much then for the method of estimating the total and the mean pressure on the upright surface of the cistern, an estimation that should never be neglected when safety is an object of consideration; the downward or vertical pressure, however, is not necessary to be considered in the present case, for since the vessel was placed on a solid and level foundation, there could be no danger of failure in the bottom parts, the brickwork performing the same office as an additional thickness in the metal. T.

(To be continued.)

ARCHITECTURAL NEWS FROM PARIS.

[FROM OUR OWN CORRESPONDENT.]

ARCHITECTURAL improvement is marching with gigantic strides in Paris. In every quarter old houses are being thrown down, and palaces erected in their places; mansions are springing up in spots that for centuries have been receptacles for mud and filth; narrow courts and streets are being swept away, and magnificent streets erected on their sites. In no city in the wide world have such striking improvements been effected within a short time as in Paris, and certainly in no other are such vast improvements projected. Among the ameliorations made within the last two years, or now in progress, may be cited the opening of the Rue Rambuteau, which is a magnificent thoroughfare, in a densely populated quarter; a splendid street from the Palais de Justice to Notre Dame, whereby the abominable nest of tumble-down houses in the old city have been swept away; several new streets of lofty mansions in the Quarter de Tivoli; a splendid street and square facing the Versailles and Rouen railway station, in the Rue St. Lazare; a fine but simple station for the Northern railway; three new streets between the Bank of France and the Bourse; three or four new streets in the parcels of land adjacent to the St. Germain's railway; a new street between the Faubourg du Roule and the Champs Elysées; two or three others at Montmartre; several magnificent palaces in the Champs Elysées (prominent among them that of the Countess de Léon); the Boulevard des Capucins, the Boulevard des Italiens, &c.; the new Rue de Rougemont, from the Boulevard to the Rue Bergère; several new streets between the Faubourg Montmartre and the Faubourg Poissonnière; the Rue Lafayette, the termination of the splendid church of St. Vincent de Paul; the restoration of the venerable Cathedral of Notre Dame; the complete reparation and decoration of the Church of St. Germain L'Auxerrois; a new chapel for the Virgin in the Church of St. Sulpice; the decoration of the Chamber of Peers; the finishing of the Hotel de Ville; a new façade to the Hospital de la Charité; an elegant and simple Protestant chapel for the Germans; a new prison for a trial of the separate confinement system; the splendid and costly decorations of that beautiful pile, the Church of the Madeleine; a vast entrepôt for the Rouen and Havre railways; and, last but not least, a palace lately commenced for the ministry of foreign affairs. Among the improvements about to be undertaken, are the erection of a new opera house, worthy, by its architectural magnificence, to be the great musical theatre of France; a vast station for the Paris and Lyon railway, and another for the Paris and Strasbourg; a new hospital on the Clos St. Lazare, adjoining the Northern railway; a new church on the vast lands of Belle Chasse, in the Faubourg St. Germain; several new buildings for rare and curious birds and animals, in the Garden of Plants; the continuation of the Rue de Rivoli to the Hotel de Ville; a new Bibliothéque Royale; some new streets in densely-habited quarters; one or two squares on the London system; the completion of the Pantheon by the erection on the top of the lantern of the statue of Immortality, and other improvements; two new markets, with all the latest ameliorations introduced in England, Holland, the continent of Europe, and the United States; vast entrepôts for goods and merchandize arriving by the Northern and Strasbourg railways; the completion of the Louvre and the Place de Carousel, and the erection of several public edifices of minor importance.

Of all these projects the most important are undoubtedly the new Opera and the new National Library, or Bibliothéque Royale. With respect to the former, the public authorities and people of all classes are unanimous in thinking it absolutely necessary. The present Académie Royale de Musique is a disgrace to such a city as Paris, which haughtily claims to be the capital of civilization. It was originally designed as a temporary structure, on the destruction of the edifice of the Place de Louvois, and was, as such, hastily run up in wood. More than twenty years have elapsed since then, and yet no plans for a new theatre have been definitively chosen. But there are few things which press more strongly for a prompt decision, for, in addition to the disgrace of having a miserably dingy wooden structure, for the home of the musical drama of such a nation as France, there is every hour most imminent danger of its being destroyed by fire, and not it only, but the entire quarter in which it is situated. Its existence for so long a period may be considered the result of a miracle. For my part, if I were a Frenchman, I would brave the laws against arson, and, at the risk of the gallies for life, set fire to it; for to destroy it would really be to render a service to the public and the country. It appears that the great difficulty of coming to a decision for pulling it down, is the choice of the site for a new theatre. The Minister of the Interior, supported by the directions of the Department of Fine Arts—the committee that superintends public buildings, &c., recommends the piece of ground at present occupied by the Mairie of the second Arrondissement. It is close to the existing theatre, and is a site of considerable extent, perfectly isolated, and in the midst of the very best quarter of the town. The greater part of the aristocracy and superior classes also warmly support that site, as do likewise the inhabitants of the new quarters of Montmartre, Tivoli, Lafayette, Batignolles, &c. But the corporation of Paris strongly opposes it, insisting, instead, on the Place du Palais Royal. Many circumstances, it must be confessed, militate strongly in favour of the views of the corporation. First of all, the site they recommend would be in the centre of the town, and thereby easily accessible to the entire population; next, it would cost just one-fourth less than that of the Rue Grange Bateliére; thirdly, it would have the effect of sweeping away a nest of wretched and dirty houses, and of making the quarter the most magnificent in Europe; for on one side would be the Louvre, on another the Tuilleries, on a third the Palais Royal, whilst one of the principal thoroughfares leading to it, would be the majestic Rue de Rivoli. Upon the whole, therefore, I incline to think that that site ought to be chosen. The corporation will not hear of any other, and if another be selected, will not give a single *sou*, whilst with that, it is proposed to award six, eight, perhaps twelve million francs for the new theatre. At this moment the matter is undergoing investigation by the municipal authorities, and in the course of the ensuing session, the Minister of the Interior will doubtless introduce a law for the erection of the new opera house.

With regard to the Bibliothéque Royale, there are also discussions as to the site, but none at present has been definitely fixed upon. The present buildings are long and straggling, covering an immense surface of ground, and manifesting a great desire to tumble into ruins—a disaster from which they are only saved by heavy annual outlays. Exist much longer they cannot, even with all the expense they occasion, and so down they must come. The government proposes to erect the new library in a different quarter of the town altogether, so as to be able to sell the parcels of land in which the present edifice stands. Those parcels are in one of the busiest, richest, and most populous quarters of the town, and their sale would realise an immense sum, almost enough to pay for the new building. But interested parties object to a change of the present site, on the ground that in any other quarter of the town it would be inconvenient to that small portion of the public which frequents the library. It is not likely, however, that their convenience will be permitted to outweigh the general interest which undoubtedly requires the removal of the present odious Bibliothéque Royale, and the sale of the site on which it stands.

Paris, Dec. 22nd.

GOETHE—ON PALLADIO.

VICENZA, 19th Sept. 1786.* During the few hours that I have been here, I have run over the place, and have glanced at the Olympic theatre and the buildings of *Palladio*. A pretty little book illustrated by engravings, has been published for the use of travellers, together with some artistic remarks. When, however, we find ourselves in sight of these works, then only we perceive their great worth; because it is their destination to fill up by actual grandeur and *reality*, and to satisfy our mind by the beauteous harmony of their dimensions—not merely in abstract plans lying before us, but by the whole starting and receding of their perspective. And thus, I say of Palladio, that he was a thoroughly internal, and from the very innermost, a great man. The main difficulty, however, with which he, like all modern architects had to grapple, was the adequate use of architectural orders in *civic* (profane) buildings; because it is, after all, incongruous, *to combine walls and columns*. But it is astonishing to see, how he has worked these up together—how he imposes upon us by the viewing of his works, and makes us forget, that it is *still* imposition. There is, really, something God-like in his works, alike to the forms of a great poet, who from out of truth and untruth makes a third, whose *relative* reality is still enchantiug.

If, however, we view on the spot those splendid monuments raised by that man, and find how they have been already disfigured by uncleanly habits—how their plans mostly exceeded the means of their owners; how little, after all, these precious monuments of an elevated mind tally with the life and existence of those around—we shall be forcibly reminded, that things are every where the same: because we get no thanks if we endeavour to elevate men's inner wants, to give them a great idea of themselves, impress on them the feeling of the magnitude of a real and noble existence! But if you be-lie these birds,† tell them stories, helping them on from day to day—corrupt them; then you are their man, and it is therefore, that modern time rejoices in so many absurdities. I do not say so to depreciate my own friends (!), I say merely, that they are so, and that we must not wonder, that things are as they are.

How the basilica of Palladio looks close to an old castle-like building, covered with dissimilar windows, which, together with the steeple, the architect thought of removing—can be scarcely uttered by words; and it needs for me to use all self-control, as I find alas! even here, what I hate and love, close together.

21st Sept.—I went to see the old architect, *Scamozzi*, the editor of Palladio's buildings, a sterling enthusiastic artist. He gave me some useful information, joyous at my interest in these matters. There is one amongst the buildings of Palladio, for which I always had a great predilection; they say, it was his own dwelling—but being seen, it is far more than would appear from the design. I would wish to see it drawn and coloured in that way, as age and the kind of material have made it now. We must not think, however, that the artist has built a palace for himself. It is the most modest house in the world, and has but two windows, which are separated by a space sufficient to bear a third opening. If a picture were made of it, comprising the neighbouring houses, it would be amusiug to see how it is interpolated betwixt them. Canaletti ought to have painted it.

To-day I visited that shew-palace (*Prachthaus*), situate half an hour from the city, on a pleasing eminence—called the *Rotonda*. It is a square building, containing a round saloon lighted from above. From the four sides you ascend on broad stairs, and reach at every side a porch, formed by six Corinthian pillars. It may be, that architecture never pushed splen-

* Italienische Reise. Vol. I.

† Allusion to the comedy of Aristophanes, and an analogous poem of Goethe himself.—*Transl.*

our to a higher pitch. The space taken up by stairs and porches, is far greater than that of the building; because every side would be quite sufficient for the entrance of any temple. The inside is habitable, but not comfortable. The saloon exhibits the finest proportions, as well as the rooms, but they would hardly suffice for the wants of a noble family during a summer residence. On the other hand, every side presents itself from all parts of the adjoining country in a most magnificent manner. The diversity, with which the whole main building, as well as the projecting columns, move before the eyes of the beholder is very great—and thus the object of the owner has been perfectly attained, who wished to leave behind a great entail of property, as well as a tangible monument of his wealth. And alike as the building is perceived from all parts of the country in all its magnificence—the view therefrom is also most pleasing. We perceive the course of the Bacchilione, the vessels from Verona, down towards the Brenta.

Padua, 27th Sept. 1786. At last I have acquired the work of *Palladio*, although not the original, which I had seen in Vicenza, with wooden engravings, but an accurate copy, or rather a *fac simile*, edited by an excellent man, the late English Consul *Smith* at Venice. This we must leave to the English, that they have known long ago how to appreciate the worthy, and that they spread it in a noble way.*

On account of this purchase, I stepped in to a bookshop, which, in Italy, have a particular appearance. The books, stitched, are deposited around the place, and you find the whole day good company. Whoever of clergymen, landed gentry or artists is anyhow connected with literature, is constantly about the place. You ask for a book, open it, gaze on, and amuse yourself as it may come. Thus I found about half a dozen together, all of whom, when I asked for Palladio, became attentive to me. While the master of the shop was looking for the book, they praised it, and informed me about the original and the copy; they were perfectly acquainted with the work and the merit of the author. As they took me for an architect, they approved my resorting especially to the works of this master—who availed more for use and practice, than even Vitruvius, as he had thoroughly studied the ancients and antiquity, and endeavoured to bring them nearer to our present wants.

Venice, 8th Oct. 1786. In the completed works of *Palladio*, especially the churches, I have found some things blameable aside the most magnificent. As I was thus considering within myself, in how far I was right or wrong towards such an extraordinary man—it was as if he stood close to me, saying: "this and that I have made against my will, but still did it—because I could not, under given circumstances, near my highest idea, in any other way."—It appears, the more I think of it, that he, in considering the height and width of a church already existing, or an ancient house, to which he had to erect new fronts—merely thought: "How can you give to these spaces the greatest possible form? In the detail, you will be obliged, on account of unavoidable impediments, to contort or cobble somehow or other; here and there some incongruity will arise—this may; still the whole will exhibit a grand style and you will rejoice at your work."—And thus, he has carried the greatest images, as they dwelled in his soul, even there, where they didn't quite tally—where, in the detail, he was obliged to knead and tether them.—The wing in the *Carita*, therefore, ought to be the more valuable to us, as the artist had his free will, and could follow unboundedly the impulses of his mind. If the convent had been completed, there would perhaps, not exist in the whole actual world, a more perfect work of architecture.

How he thought and worked, in fine, becomes to me the clearer, the more I read his works, and consider, how he treated antiquity; because he makes few words, but they are all weighty. The fourth book, which represents the ancient temples, is a true introduction to the viewing sense-fully the relics of antiquity. J. L——y.

* The handsomest compliment ever paid to the higher endeavours of this country. No amount of bank stock would have impressed *Goethe* with such a good opinion.—*Transl.*

NOTES IN THE PROVINCES.

The ceremony of consecrating the Grand Junction Railway Church, at Crewe, took place on Thursday week. It is a cruciform structure, has a tower, and is built of Newcastle blue brick. It is capable of accommodating 700 persons.——The last brick in the arching of the gigantic tunnel through the Calton Hill, Edinburgh, was laid yesterday week. It is 400 yards long, 26 feet high and 26 feet in width. With the exception of about 40 yards at the east end, it is entirely through rock. ——We have on more than one occasion referred to the proposed bridge over the Severn, and the proposed tunnel under it. In reply to an application on the subject, made by Capt. F. Berkeley, M.P., the Lords of the Admiralty addressed to him the following letter:—

"Admiralty, Dec. 13, 1845.

Sir,—Having laid before my Lords Commissioners of the Admiralty your letter of the 11th inst., I am commanded to acquaint you in reply, that you may be assured that their lordships will never sanction a bridge at Hock Crib, or over any part of the Severn which shall be detrimental to its free navigation. No plan for a tunnel has yet been laid before them, but whenever it comes, the due preservation of the bed of the river will be their lordships' first consideration.—I am, Sir, your most obedient humble servant,

W. C. B. Hamilton.

——The sum of 2,350*l.* has been subscribed by the clergy alone for the restoration of Llandaff Cathedral, the bishop of the diocese having given 500*l.*, and the bishop of Winchester, 100*l.*——It is intended to erect a statue of Sir Charles Morgan, Bart., in the new market-place at Newport. The subscription list for this object is filling rapidly.——Chester Cathedral, which has been for some time closed for restoration and improvements, was re-opened last Sunday.——Notice has been given to the committee of the present Exchange at Manchester, by the projectors of the Royal Exchange there, that they shall not be in condition to apply to Parliament for a bill in the next session; and they, consequently, relinquish the contract for the purchase of the Exchange buildings. The proposed enlargement of the existing building will now be proceeded with.——A new church is about to be erected at Woolwich, after a design by Mr. Gwilt. It is to be constructed in the Byzantine style of architecture, and capable of accommodating 1,000 persons; the cost of its erection, including every incidental expenditure, will not exceed 7,000*l.* ——*The John o' Groat Journal* states that no less a sum than 70,000*l.* is to be expended in improvements on Dunrobin Castle.——A new lunatic asylum for the county of Essex is in contemplation. It is supposed that Chelmsford will be selected as the *locale*.——At Wisbeach it is intended to erect a museum in the garden abutting on the churchyard, lately the property of Dr. Hardwicke. The expense will be about 2,500*l.*, and the greater portion is already raised in shares of 25*l.* each. Part of the building is to be occupied by the Wisbeach Literary Society.——From 600 to 800 men, artificers and labourers, have been daily at work during the past year, in the construction of the new steam basin at Portsmouth. The south wall is in the most forward state, a large portion of it being nearly completed. A long line of the west wall has also made considerable progress; the walls are of the most substantial formation, their entire facing is of huge granite blocks. The contractor is Mr. Peter Rolt.——Stanwix church, near Carlisle, narrowly escaped destruction by fire last Sunday week. The accident originated in the over-heating of a flue. The furniture of the church has sustained much damage; most fortunately the painted window escaped with little or no injury. —— The Martello towers of Jersey are undergoing repair and improvement. They are to be rendered habitable, and the loop-holes, which throughout the island are too wide, are to be narrowed. A new iron ventilating apparatus is also being erected upon the summit of each. ——The river Severn has been greatly improved during the last two years by dredging, and by the erection of weirs and locks. Upwards of 200,000 tons of marl, rock, gravel, and soil have already been raised from the bed of the river by Messrs. Grissell and Peto's dredging machine alone, besides what has been removed by another contractor. At Gloucester it has been necessary to remove the entire foundation of one of the piers of the old bridge, and in the course of this operation some curious relics of ancient coins have been discovered.

REMOVAL OF ST. BENET'S FINK.

Sir,—I perceive that you have been addressed on the subject of St. Benet Fink Church by Messrs. Oak and Stone, whose high reputation I much respect; but their suggestion "to build the church up again in its original form" may, perhaps, bear some comment, and as I have recently made accurate drawings of the church in order to preserve its memory, I can form some idea of its fitness for re-erection.

Nothing of Wren's can be lost without regret. All his works evince the most masterly construction, much artistic merit, and generally, though not always, an economical application of circumstances and materials. The church in question, though not one of his best, is a good specimen of the latter excellence, being remarkable for a skilful adaption of form to the peculiarity of a limited site, adjoining the rounded corner of a street. The plan is an elliptical decagon, decorated inside with six columns of the composite order, standing at a distance of about twelve feet from the walls, so as to form an aisle of that width all round the church. Each column bears an enriched entablature extending from it to the outer wall, and upon these are turned semicircular arched vaults over the aisles, presenting moulded archivolts towards the centre portion of the church; these are surmounted by an elliptical enriched cornice, forming the base of an elliptical dome, upon which dome, I believe, a lantern light was originally placed, but has not been in existence for many years. The windows are large semi-circular headed, and internally very ugly, from their crude unadorned character. There is a small quantity of good oak carving in the style of Wren's time. The pulpit carving is bad, and of later date. The exterior of the church requires no particular description; it has Wren's usual accompaniments of architraves, cornices, festoons, &c, and much external effect could not be given to such an ungainly form as an elliptical elevation. The principle artistic excellence in this church I deem to be the judicious introduction of columns and arches into the interior. Wren is distinguished for a masterly power in this respect, as displayed in nearly all his churches; and the elegance, variety, and chiaro-scuro resulting from it, have gone far to confer on his memory that high honour of which he was so eminently worthy.

Notwithstanding this, I think the rebuilding the church according to its present design, would be bad taste, and questionable economy. It was adapted, as I have said, to a peculiar site, and you, Sir, well know that the quality of fitness, or the suitableness of a work of art to its circumstances, is a chief excellence in design. Now, if any person intending to erect a new building, chose to purchase the columns or other materials, and skilfully to apply them to a new design, suitable for his new purpose, he might do it without departing from the genuine spirit in which our revered Sir Christopher worked. I avoid all discussion upon the subject of Wren's churches being appropriate for the present day, merely concluding with the remark, that there is a fashion in architecture as in other things, and that it is generally dependent upon the religious and political character of the times.

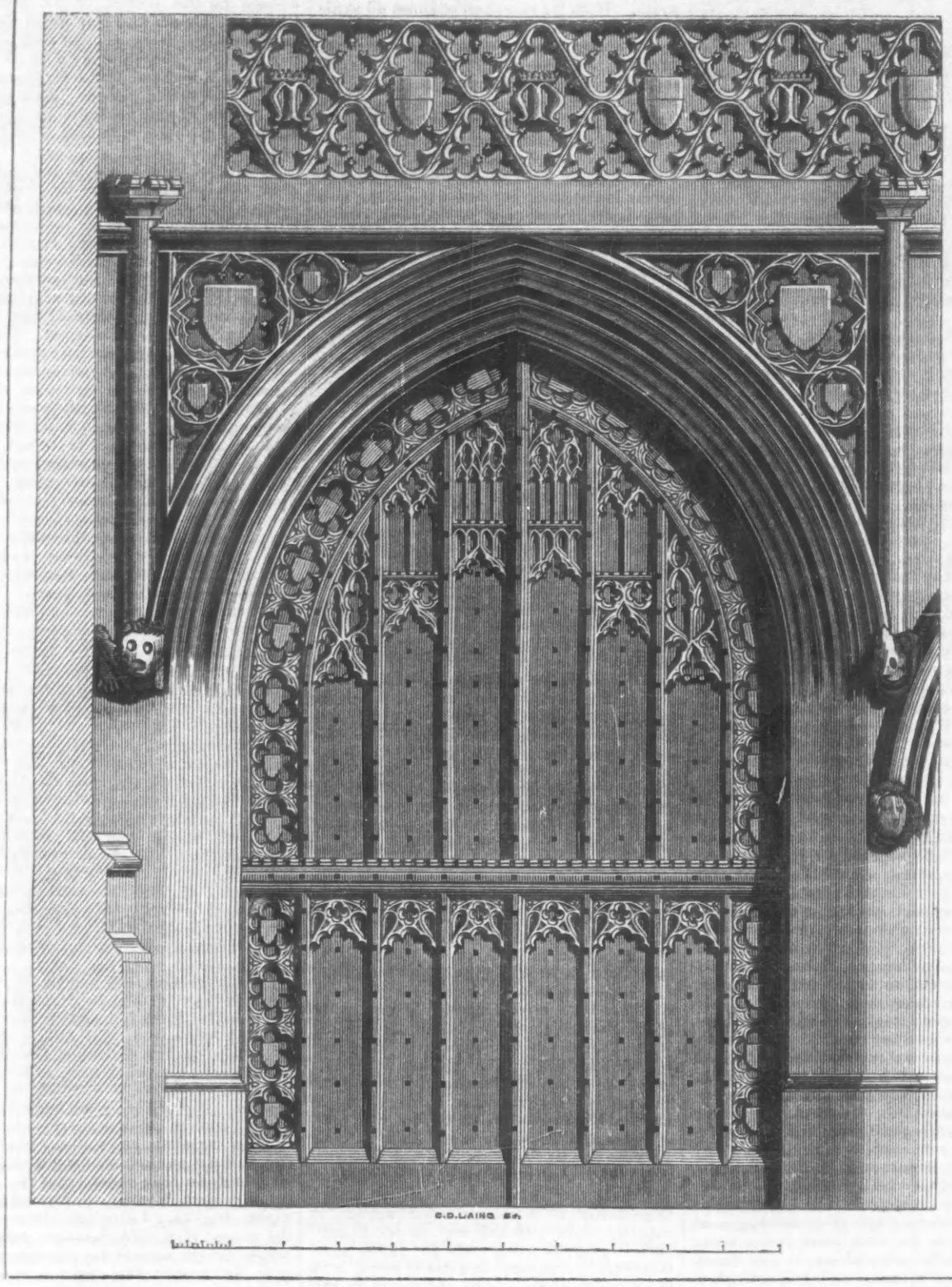
I am, Sir, &c., Edwin Nash.

Moorgate-street, Dec. 29th, 1845.

Recipe for making Tracing Paper.—The editor of the *Mechanics' Magazine* gives the following recipe for producing a tracing paper "that leaves nothing to be desired." Mix six parts (by weight) of spirits of turpentine, one of rosin, and one of boiled nut oil, and lay on with a brush or sponge.

The Nelson Monument.—The Woods and Forests have at last determined on completing this work; and Mr. Watson, Mr. Woodington, Mr. Carew, and Mr. Ternouth are appointed to execute the four *bassi relievi*. Mr. Lough is to do the four lions at the foot.

GATEWAY, BISHOP'S PALACE, NORWICH.



GREAT GATE TO BISHOP'S PALACE, NORWICH.

We are indebted to Mr. Britton for the admirable drawing, made by Mr. Repton, from which the above engraving is taken. The arch is of stone; the upper part of the building is of flint, with stone dressings. There is a small lateral door, which is ornamented with carved quatrefoil panels, having within them a heart and a mitre alternately. We are unable to insert in the present number a notice of the edifice to which it belongs, but will remedy the omission shortly.

COMPETITION CARTOONS FOR ART-UNION OF LONDON.

The premium of 500*l.* offered by the committee of the Art-Union of London has brought twenty-eight cartoons, and it has been determined to throw them open to the criticism of the subscribers and the public, *before* the committee come to a decision. They have accordingly been arranged in the gallery of the New Society of Painters in Water Colours, Pall Mall; and on and after Monday next subscribers will be admitted on shewing the receipt for the current year. Many of them have extraordinary merit, and, together, they form an exhibition of the most interesting character.

"Saxon Almsgiving" (No. 2) is an exceedingly pretty drawing. "To supply the needy," says the catalogue, "was the office of the noble mistress of the mansion; and hence our word '*lady*' is supposed to have originated in the term *leaf dian* (loaf server), abbreviated to *lafdy*.

In the centre is the lady distributing the bread from the basket of her handmaid. By her side her daughter descends the steps, giving apples to the children. First among the applicants, a young mother appeals to the *loaf-giver*, by shewing her new-born child.

Behind her is a widow with her daughter and son; and farther back, humbly seated, is a deserted female with her infant."

The male figures placed together, on the left of the spectator, contrast well with the group of girls and children.

"The Life of Alfred" (No. 4), has merit of a high order. The figure of the king, who is represented as dividing his loaf with the pilgrim, has great dignity. It is well adapted for fresco.

"Queen Philippa interceding for the lives of the Burgesses of Calais," (No. 10), is a work of surpassing beauty. The grouping is admirable—every head a study. Doubt, resignation, and patriotism, in the six burgesses who lay at Edward's feet the keys of their city, are finely portrayed, as are the deliberation of the king, and the anxious supplication of Philippa. The figure of the one citizen who, though with rope round his neck, is with difficulty constrained to humility by his wife, on her knees, at his feet, is well conceived. The execution, too, of the whole is excellent; and though it may be urged by the hypercritical, that the general expression is slightly exaggerated, we have no hesitation in pronouncing this a first-rate work of art.

No. 11. "Anne Askew refusing to sign the Six Articles," has in it something of earnestness and power; and the same remark will apply to a cartoon opposite to it (No. 20), "The Bishop of Carlisle denouncing Henry Bolingbroke, Duke of Lancaster, when about to usurp the crown."

"Howard visiting a Prison" (No. 12) will extort admiration, though it may not give pleasure. The misery represented is perfectly appalling. The figure of Howard will be found full of feeling by those who take the trouble to study it; the upraised clutched hand shews the effect of the gaoler's recital, to which he is listening.

There is knowledge and good feeling shewn in No. 13, "Non Anglised Angeli," representing a well-known incident in the life of Pope Gregory I.

"Ancient Britons defending their Families from the Romans" (No. 18) is entitled to commendation for vigour and decision of hand. Some passages from the old masters are recognizable.

"The Meeting of Henrietta Maria, Wife of Charles I." (No. 19) is not without merit; and the same may be said of (21) "The Death of Harold," and (No. 22) "Alfred, surrounded by his Family, addresses Edward, his son and successor."

No. 23. "The Welcome of the Boy-King, Henry VI. into London after his Coronation at Paris" is an exceedingly elaborate and clever work, displaying much skill and rich fancy, though somewhat confused and spotty. The King has reached the conduit in Cheapside. Art has expended its powers in decorating the spot, fountains are flowing with wine, and a crowd of knights, burgesses, and fair damsels fill the scene.

No. 25. Representing "The Seizure of Roger Mortimer, by Edward III. in Nottingham," is hardly surpassed by any in the higher qualities. The drawing is admirable and some of the details,—the chain-armour, for example, are executed with extraordinary skill. The head of King Edward is the least effective part of this otherwise most excellent cartoon.

With a word of praise for No. 27. "Spenser reading the 'Faërie Queene" to his Wife and Sir Walter Raleigh," we close our present hasty notice, written at the moment of going to press, of an exhibition which must be regarded with great interest, by all who are watching the progress of the fine arts in England.

ANCIENT SPEAR.—As the workmen were excavating for some cellarage in front of houses now building by Mr. Harding, in the Fulham-road, a spear head of copper (16 inches long with a blade of 2 inches wide projecting from a taper hollow tube of 1 inch to a fine point) was found. The copper was so decayed, as to crumble when touched. It was found 12 feet from the high road, nearly opposite the gate of the Earl's Court Cemetery, about 4 feet 6 inches from the surface of the ground.

CAMEOS will in future be admitted into England on payment of a duty of 5 per cent. on their value. The duty formerly levied was found to be almost prohibitory.

OLD ENGLISH CHAIR.

OLD ENGLISH CHAIR.

In our last volume we gave representations of several varieties of chairs to be found in the farm-houses and mansions of old England. The annexed engraving belongs to that series, and was postponed by accident. Solid and substantial, with something of dignity, they partake in a degree of the character of the yeoman at the time they were made, and cannot be regarded without interest by their descendants.

OPENING PUBLIC BUILDINGS AND WORKS OF ART.

The dean and chapter of Norwich have given directions for opening their cathedral to the public gratuitously for two hours on every week day, instead of one as heretofore, namely, from 11 o'clock A.M. to 1 o'clock P.M. We mentioned some months since that it was the Queen's desire that no fees should be taken from any person visiting the state apartments at Windsor Castle. It is now officially announced that none will be taken, and that tickets for the admission of visitors on Tuesdays, Thursdays, and Fridays, between the hours of 11 and 4, from April to October, and 11 and 3, from October to April, may be obtained, *gratis*, at Messrs Paul and Dominic Colnaghi and Co.'s, printsellers, No. 14, Pall-mall east; Mr. Moon's printseller, No. 20, Threadneedle-street; Mr. Mitchell's, librarian, No. 33, Old Bond-street; Messrs Ackermann and Co.'s, printsellers, No. 96, Strand.

We shall be glad to hear that the verger at St. George's Chapel is behaving with more propriety than heretofore.

It is to be hoped that the arrangements at the Castle will not be nullified by the conduct of the attendants there.

We have from time to time, received many complaints against the course pursued at Westminster Abbey. Correspondents state that no one is allowed to see the building as it should be seen, being hurried from tomb to tomb, without a moment for a glimpse at the structure itself, in a manner which is ludicrous as well as annoying. We visited the Abbey a few days ago (wonderful place that it is!), and found that the statements in no way exceed the truth. The new dean, Dr. Buckland, is a zealous antiquary, and, if we remember rightly, has admitted a conviction that the contemplation of ancient buildings, and other works of fine art, has a useful effect. We respectfully call upon the very reverend gentleman to interpose his authority, and to obtain for those who pay their sixpence the quiet enjoyment of what they come to see. We look anxiously for the abolition of the charge altogether.

We hear with great gratification that the church of St. Mary Redcliffe, Bristol, will probably be thrown open to the public without charge forthwith. The present sexton, who has derived a considerable income from the exhibition of the church, being about to give up the appointment, the vestry thought it a fitting opportunity to consider the question, and have virtually determined, we believe, to admit the public without requiring any fee.

RAILWAY JOTTINGS.

The Sheffield, Ashton-under-Lyne, and Manchester Railway was opened throughout last week. The length of the line is about 41 miles, and, in addition to the great tunnel, which is upwards of three miles in length, it has other works of a most stupendous character,—the large viaduct over Dinting Vale, consisting of five arches made of wood, of 150 feet span each, and nine of stone, of 50 feet each, and elevated 120 feet; also the wooden bridge at Broadbottom, which is said to be the highest in the world, being 17 feet higher than Menai Bridge and 11 feet higher than the Stockport viaduct. The tunnel is in the form of an ellipse turned on its end, and is 18 feet above the rail and 15 feet wide, and is nearly lined throughout with masonry. There are five shafts, ten feet in diameter, each lined with masonry; and in order that our readers may form an idea of this great work, we give the depth of each shaft: No. 1, 182 yards; No. 2, 189 yards; No. 3, 167 yards; No. 4, 193 yards; No. 5, 136 yards; and no less than 130 tons of gunpowder have been used in the cutting.——A patent has been secured by a Mr. Gorden for a new motive power, obtained from the well known expansive properties of heated air.——

A project is in contemplation for laying, along the line of the Birmingham and Gloucester Railway, pipes for the conveyance of brine from the salt-pits of Droitwich and Stoke Prior, to Gloucester; to be manufactured there into salt.——In addition to the cases we have already given of disputes between engineers and committees, we notice one between the Great Leeds and London, and Messrs. Higgins and Milford, who agreed to reduce their accounts from 10,000*l.* to 4,150*l.*—and another between Messrs. Candell and Branton, and the Liverpool, Preston, and North Union project, the plans of which were not deposited, though promised.——"We have the best authority for stating" says the *Shareholder*, "that an Act will be introduced next session which makes it imperative on every member of a provisional committee to pay at once, before he is registered and authorized to act as such, his deposit on fifty shares, the same to be lodged in the accountant-general's hands, and not to be returned unless the company completes its obligations to the public.——Experiments of a highly satisfactory character have been made with regard to the application of Electro-magnetism to railway propulsion. The great difficulty to be surmounted is the weight and size of the galvanic batteries requisite for sufficient energy. To obviate this difficulty it has been proposed to have stationary batterics at regulated distances, and to make the rails themselves the conducting lines of the batteries.——The Grand Junction and Birmingham Company have just made a further reduction of fares. Between Liverpool and London the fares are reduced as follows:—Express and select trains, from 47s. to 45s.; first class, from 40s. to 37s.: second class, from 31s. to 27s. The fares between London and Chester, Lancaster and Preston, are reduced in the same proportion. Between Liverpool and Birmingham, the second class is reduced from 14s. to 13s. From London to Birmingham, the reductions are by express and select trains, first class, from 27s. to 25s.; by mixed fast and select trains, first class, from 23s. to 20s.; by mixed fast and select trains, second class, from 17s. to 14s. ——The Old Town Hospital in Clyde-street, Glasgow, has been purchased by the Caledonian Railway for the sum of 17,000*l.* The same was exposed for sale in 1844 for 12,000*l.*, but did not find a purchaser.——A patent has recently been obtained in Prussia and Saxe-Weimar for a moveable railway. The carriage, or diligence, is provided with two series of rails, one on each side, and which, by some simple mechanism, move so that one of them is always under the wheels. Though the coach cannot run with the speed of a railway carriage, it can proceed twice as fast as other carriages on common roads, and may be employed where the gradients are strong. It may be drawn not only by an engine, but by horses.——Notices have been served upon the owners and occupiers of property within the limits of the proposed Central Railway Station, at Leeds, with the view of obtaining their assent to or dissent from that project. The estimate of this undertaking is now reduced from 500,000*l.* to 400,000*l.*, including the purchase of property and the erection of the station. Since the withdrawal of the Leeds and Manchester, the parties embarked in the scheme are the Leeds and London, the Leeds and York, and the Leeds and Dewsbury; the Leeds and Thirsk not having yet come to any final decision upon the subject. ——The bridge erected over the occupation road near Haxell's farm, on the Eastern Union line, has, within a few months, given way, and is useless for railway purposes. The disruption of the masonry has been caused by the earthwork, now carried to the bridge, so pressing upon its foundation as to force the upper parts asunder.

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STATE OF THE GAS MAINS.

SIR,—The remarks of your correspondent "Carbon" upon this subject are very just so far as they extend. Having for many years past taken an interest in the subject, and given it much attention, I can bear testimony to the accuracy of his statements, of which, indeed, any person can have olfactory evidence by taking a walk some *calm* evening, and directing their steps near to the gaslights. And is this waste of gas to be wondered at, when we consider the barbarous method of laying down and joining the mains that is practised? "Old use and wont" here, as in too many other matters, is the rule of conduct, and of course the public suffer. The duties of an inspector are most important, and should only be committed to one whose heart is likely to be in his work, and whose knowledge is commensurate.

How can a *ci-devant* clerk or shopkeeper who has, perhaps, never handled a tool in his life, or a carpenter whose experience is in quite a different line, tell whether the workmanship that comes under his eye is properly done? It may present a fair seeming *surface*, and the inspector, conscious of his ignorance, seeks no further; the consequence is, that the laying of the mains and service pipes is in practice left to the labourers. No inspector should be above examining every pipe and joint with his own hands, before it is covered up, and he should see that every pipe has a firm bearing throughout its whole length; neglect of this precaution is of more evil consequence than is generally imagined.

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Camden Town, Dec. 1845. J. A. E.

GAS IN LONDON.

SIR,—I trust the day is drawing near when gas will be supplied only by meter. The result of this would be of the greatest benefit, not only to the consumer, but to the companies; to the consumers, from their having only to pay for the gas they actually consume, and not as at present, for the saving and honest to have to pay for the wasteful extravagance of the dishonest. To the companies, it would be a boon, by their being paid for all the gas they supply, which is far from the case by the scale system; and the consumption of gas would be increased to an extraordinary extent by the reduction that could necessarily be made, and the dividends would be much larger for the shareholders; and this is not mere assertion, for in the whole of Scotland, Liverpool, Manchester, Birkenhead, &c., or wherever gas is sold only by meter, the price is always smaller, and the dividends larger, than where the gas is sold by scale.

Gas can only be properly supplied by means of the meter; and by this system the companies would be compelled to manufacture a better gas, and of a greater illuminating power, instead of the carburetted hydrogenated gas supplied at present; and this, without reference to price, would reduce the cost to the consumer nearly one-half.

The introduction of dry meters may be very well in such countries as are subject to severe frost, but in this country I do not think it at all necessary or requisite, as the wet metre has had many years' trial, and its accuracy and utility is satisfactorily proved. There are many in use at the present time, made under Crosley's patent, that have been fixed upwards of twenty years; their principle, of registering the quantity of gas passed through them, is the most beautiful, perfect, and at the same time, simple that can be imagined; and this has been felt and acknowledged, by the very large amount of damage awarded at different times for the infringement of the patent, and which would not have been given had it been the useless and inaccurate machine described by the supporters of the dry meters.

It has been falsely stated, that wet meters are liable to an accumulation of water; by which means they are made to register incorrectly, and against the consumer; it is only so when in the hands of stupid and careless people.

It is the duty of the inspector of a gas company to attend upon the fixing of all meters, and explain their construction and mode of registering, so that it shall be properly understood by the party using it; but this is generally neglected, owing to the so-called inspectors being totally ignorant of it themselves; they can read the index, and that is all; and when any thing occurs so that they are required to act, they deliver a very wise and lucid harangue, and finish by recommending a dry meter, and thus screen their want of knowledge.

Gas companies should be compelled to supply gas only by meter, and of very different description to that manufactured at present; and the evidence given before committees of the House of Commons on this subject renders it a matter of surprise that this has not been done before; too much attention has been paid to price instead of quality.

I am, Sir, yours obediently,
December 18, 1845. "CARBON."

*** We learn that M. Peclet lately laid before the Society of Encouragement of Paris, a machine for purifying gas. It is composed of a horizontal cylinder, partly filled with lime water, the axis of which is covered with diaphragms of metallic canvas, turned slowly.

The following statement of the price of gas, and the receipts of the Liverpool new Gas Company, shew that the receipts have greatly increased with the reduction in price:—

1839 ..	10s. per 1,000 feet	£24,265
1840 ..	10s. six months, and 8s. six months, ...	26,188
1841 ..	8s.	27,133
1842 ..	7s.	28,979
1843 ..	7s.	30,591
1844 ..	6s. half-a-year	17,069
1845 ..	6s. half-a-year 5s. half-a-year	33,021

FRENCH PROTESTANT EPISCOPAL CHURCH.

THE church built in Bloomsbury-street, Bloomsbury-square, under the superintendence of Mr. Poynter, architect, for the French Protestants, was consecrated by the Bishop of London, on the 23rd ultimo. The ground on which it stands was purchased from the Commissioners of Woods and Forests for 2,600*l.* Mr. Byrne was the builder.

This congregation was first known in 1640, under the name of the "Westminster French Protestant Church," composed of merchants already established in London, and of refugees driven from their country by religious persecution. This church, it appeared, conformed to the discipline, and adopted the liturgy (translated into French) of the Church of England in the year 1661, when it was placed under the jurisdiction of the Bishop of London and the Archbishop of Canterbury, and obtained from Charles II. possession of the chapel of the Savoy, together with an annual stipend for its "preaching minister." Since that period the congregation has been subject to various vicissitudes, having been obliged to remove, first to a chapel in Spring-gardens, and to the Greek Church in Crown-street, and afterwards to a very humble chapel in Edward-street, Soho-square, from whence they will come to the new building in question, which is dedicated to St. John. The foundation-stone was laid on the 2nd of January last.

We have not yet examined the building.

ARCHÆOLOGICAL INSTITUTE.—At a recent meeting of the committee it was announced that the Archbishop of York had consented to be the patron of the next meeting, and that Lords Morpeth and Carlisle had accepted the office of vice-presidents on that occasion. The following foreign honorary members have recently been admitted:—H. A. J. Arwidsson, president of the "Suenska Fornskrift Sallskapet," librarian-in-chief of the Stockholm Library; D. Thom, Esq., one of her Majesty's Consuls in China; the Chevalier Edouard Gerhard, Berlin; Dr. Theodor Panofka, professor of Archæology, at Berlin; and the Comte de Laborde.

WESTMINSTER COURT OF SEWERS.

The first meeting of the Court for the year 1846 took place on Friday, the 2nd instant. Captain Bague was voted to the chair. The collectors' reports were received. The cash at the bankers was declared to be 15,388*l.* 6s. 10*d.* The officers' salaries to Christmas were paid, 642*l.* 10s.; and after some routine business, the great feature in the first Court in every year, for many years, was commenced:—

No. 8, on the business paper, "Annual Nomination of Chairman to take place between the hours of two and three o'clock. In consequence of the retirement of the present chairman, the proposition of another commissioner or commissioners for the office must be then made, and a subsequent day fixed upon for deciding the appointment."

Mr. Knight, of Sloane-street, proposed Capt. Bague, R.N.; but the gallant officer immediately declined being put in nomination. No other person having been proposed, the office of annual chairman to the Westminster Commission of Sewers is now only a matter of history. A committee of accounts for the year was then proposed by Mr. Hawkes, consisting of Mr. Henry Harrison, Mr. Bathurst, Mr. Baylis, Mr. Knight, Mr. Biffin, and himself.

After considerable opposition, the committee was appointed. Mr. Le Breton's motion to increase the salary to the proposed new surveyor to 600*l.* per annum was, after much discussion, adjourned; the Court considering that Mr. Le Breton should define the duties, and settle the salary after, rather than arrange the salary first, leaving the duties to be performed an after consideration.

Court adjourned to Friday, the 9th instant, at eleven, special, to swear a jury; "To inquire into such things as shall be given them in charge, and to present what houses, lands, and tenements are benefitted by the new making, repairing, or cleansing the common sewers in the eastern division of the Westminster sewers, or that may receive hurt, loss, or disadvantage, by defect of new making, repairing, or cleansing such sewers; and also the annual rental value of the several premises, for apportioning, according to the interest of each individual, his due share of the expense appertaining to the sewage."

THE STATE OF THE SEWERS.

Sir,—It is to be hoped that you will give more information respecting the sewer in the New-road.* What is its size? What is its shape? What fall has it? How many gully-holes? How many inlets from house drains? In what way was the work performed in taking out the number of loads of deposit? What the particulars and total of cost?

Two deposit wells, each with a vessel or bucket to hold one load of deposit, if drawn up on an average once a month, might, in seven years, have prevented 168 loads entering that sewer. One deposit-well might be under the gully-hole, but the object should be to prevent the water falling too far at once, to prevent it stirring up the deposit. Above each deposit-well should be a shaft with a cover. From the side of the shaft, the water, when the well is filled to the proper height, should pass through a grated opening into the sewer. Through a hole in the cover of the shaft, by means of a rod or wire, the depth of the deposit in the bucket may at any time be ascertained. When full, or on proper occasions, the bucket with its contents to be drawn up, emptied, and replaced. This work, with proper apparatus, may be done in a few minutes.

Would it be wise to try to force all the silt, &c., from the New-road to the Thames?

Whatever form a sewer has, would it not be economy to proportion the quality and substance of the material, so that all parts should be as nearly as possible equally durable?

A Looker-On.

*** We printed a series of questions relative to sewers a short time ago, it will be remembered, which were furnished by the same intelligent writer. In reference to one of those questions, a correspondent says:—

"There can be no doubt of the advisability of carrying gas and water mains *through* the sewers, which should be built sufficiently capacious for the purpose: this would prevent the disturbance of the streets upon the first laying of the mains, and remedy the justly complained of evil of the continued opening of the ground to carry out repairs and alterations, and would afford the means of their being at all times open to inspection, and prevent the very great loss from leakage that the companies at present labour under. And this accommodation would be accompanied by a great saving of expense; in return for which, the gas and water companies should pay a rental, and this, I have no doubt, they would most readily do. A patent, now expired, was taken out by a gentleman of the name of Williams, who spent a large sum of money in endeavouring to bring it to bear. It was for the purpose of forming sub-ways in the streets of London; the lower portion forming the sewer, and the upper being arranged for the reception of gas and water pipes. But this, although acknowledged to be a great good, was prevented from being carried out by the great expense that would be incurred, as the sewerage was already arranged. Where this is not the case, this plan should be adopted, and benefit to all parties would be the result. The papers, drawings, and data connected with the patent are, I believe, in the possession of Mr. John Williams, of 29, Bucklesbury, who, I have no doubt, would be very happy to give any information required on this subject, and which is worthy of serious consideration.

I am, Sir, yours, &c. T. A. H.

Brompton.

* See p. 626, Vol. III.

ARCHITECTS' CHARGES AND RESPONSIBILITIES.

Our recent remarks on this subject have led several architects to forward us opinions and items of information in connection with it, and of these we shall hereafter make use.

Mr. George Wightwick, of Plymouth, having on several occasions found objections raised to the payment of commission, has printed a letter, which he places in the hands of those parties who apply to him. This letter views the question of responsibility broadly, and being very suggestive, we are led to think the publication of it will be useful to the profession.

"To prevent misunderstanding, as to the nature and extent of my responsibilities, in accepting the honour of your employment, I beg leave, very respectfully, to solicit your kind attention to the following:—

It is presumed your primary object in securing the services of an architect involves the recognition of his pretensions as an artist. The ordinary *builder* may construct the edifice required: you apply to an *architect* for the superadded graces of correct design and suitable decoration.

Secondly, you desire his experience and ingenuity in respect to *convenience;* to be shewn in such a compact and uniform arrangement of plan, as will prove strictly conformable to beauty of elevation, and pervading architectural propriety.

Thirdly, you employ him to afford the drawings and specifications necessary to arrive at the cost of your proposed building, and to make the best of his allowed conditions, so that, if you cannot have all you desire, you may have as much as your means will allow.

Fourthly, you engage him to supply all such *working drawings* and *occasional* superintendence, as shall insure the accurate and substantial execution of the works, so far as regards their *architectural truth* and permanent *strength*.

Fifthly, you require him to control the builder's claims upon you for payment, and to adjust all variations in the cost, induced by deviation from your first intentions.

Such being the architect's duties, he next submits to your timely consideration his exemption from certain liabilities too frequently supposed to attach to him.

1st. In matters of taste. He engages to give you what he conceives to be correct, and to the amount only which your means allow, and *not* to sacrifice, without reluctance, his repute as an artist to your individual wishes, nor to suffer under your censure for limiting his decorations to their just proportion in the general outlay.

2nd. *Convenience.*—Any partial disarrangement of the plans, first mutually agreed upon, releases him from the censure which may afterwards attach to them as a whole. It is a common error to regard as trivial, alterations which seriously affect the entire design.

3rd. *Estimates.*—He does *not* engage to make out, under your own directions, a design, the execution of which shall be within the limits of your intended outlay. All he can safely do is to learn what you require, and how you desire it to be done; and then, by measure and value, to inform you of the cost. He will *not* pledge himself to any particular amount: nor will he admit, as at all applying to himself, those imputations of *excess*, which too frequently follow where employers, by almost imperceptible degrees, enlarge upon their original instructions.

4th. *Superintendence.*—The architect is *not* employed as an operative builder or clerk of the works. It must be clearly understood, that his *occasional* visits and *working drawings* can only have reference to architectural accuracy and the liberal fulfilment of the leading articles of the specification, as affecting construction *generally*. If the builder, his foreman, or operatives be careless, and a competent clerk of the works be not engaged, roofs may leak, plumbing may partially fail, plastering may crack or become discoloured, drains may yield offensive odours, joinery may shrink, chimnies may return their smoke (indeed the latter nuisance may occur in spite of all precaution) and many other evils may shew themselves, without, necessarily, impugning the character of the architect, or in the least affecting the general stability of the structure. The most trying annoyances may originate in the most trifling defects of workmanship, and nothing short of a vigilant clerk of the works, exclusively employed without intermission, can insure perfection in matters of constructive detail.

5th. *Settling accounts.*—It is common for the architect to be equally beset by his employer and the builder; the one complaining of too great allowance, the other of too little. The architect does not engage to please either.

Terms.—Five per cent. on the outlay; travelling expenses; and the value of time occupied in travelling, reckoned at three guineas per diem. Expenses and value of time *shared* between different employers residing on the same line or in the same vicinity. But any fixed terms have reference to the unaltering progress of the employer's first settled determination; so that all subsequent deviations from the course which has been followed in strict obedience to instruction, will involve an extra charge proportionate to the extra time employed.

Again, these terms will not hold good in certain cases where *old* buildings are altered, or where the work involves a smaller outlay than will compensate (at the usual rate of per centage), for the time employed. In the former case, the labour of surveying the old structure, and of taking plans, elevations, and sections of the same, may require remuneration apart from that which is charged on the new building; and, in respect to works of small outlay, where much taste or economic management is required, the charge can only be justly regulated by the value of time.

It must be considered, that the labour of an architect frequently bears a ratio inverse to the amount of expenditure. In a large building, constructed under liberal circumstances, he charges 5*l.* for every 100*l.* well *expended;* in a small one, erected under very limiting injunctions, he may deserve 5*l.* for every 100*l. saved.* He is bound, in common honesty, to keep down the cost in the first instance; but, if further reduction be necessary, it is surely too hard to expect from him, unrequited, that additional trouble which reduces his per centage.

Should the foregoing be admitted as reasonable, I am ready to devote my best skill and care to your service."

New Lunatic Asylum for the County of Surrey.—At the Surrey General Quarter Sessions, held last Monday, in the Sessions House, Newington, Mr. Freshfield brought forward a motion relative to the necessity of providing an additional building for the pauper lunatics of the county. It appears that the present asylum is capable of accommodating only 400 patients, and that room is required for 700. The sum of 200,000*l.* is spoken of as being the probable cost of the proposed new building.

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It has been falsely stated, that wet meters are liable to an accumulation of water; by which means they are made to register incorrectly, and against the consumer; it is only so when in the hands of stupid and careless people.

It is the duty of the inspector of a gas company to attend upon the fixing of all meters, and explain their construction and mode of registering, so that it shall be properly understood by the party using it; but this is generally neglected, owing to the so-called inspectors being totally ignorant of it themselves; they can read the index, and that is all; and when any thing occurs so that they are required to act, they deliver a very wise and lucid harangue, and finish by recommending a dry meter, and thus screen their want of knowledge.

Gas companies should be compelled to supply gas only by meter, and of very different description to that manufactured at present; and the evidence given before committees of the House of Commons on this subject renders it a matter of surprise that this has not been done before; too much attention has been paid to price instead of quality.

I am, Sir, yours obediently,

December 18, 1845. "CARBON."

*** We learn that M. Peclet lately laid before the Society of Encouragement of Paris, a machine for purifying gas. It is composed of a horizontal cylinder, partly filled with lime water, the axis of which is covered with diaphragms of metallic canvas, turned slowly.

The following statement of the price of gas, and the receipts of the Liverpool new Gas Company, shew that the receipts have greatly increased with the reduction in price:—

1839 ..	10*s.* per 1,000 feet	£24,265
1840 ..	10*s.* six months, and 8*s.* six months, ...	26,188
1841 ..	8*s.*	27,133
1842 ..	7*s.*	28,979
1843 ..	7*s.*	30,591
1844 ..	6*s.* half-a-year	17,069
1845 ..	6*s.* half-a-year 5*s.* half-a-year	33,021

FRENCH PROTESTANT EPISCOPAL CHURCH.

THE church built in Bloomsbury-street, Bloomsbury-square, under the superintendence of Mr. Poynter, architect, for the French Protestants, was consecrated by the Bishop of London, on the 23rd ultimo. The ground on which it stands was purchased from the Commissioners of Woods and Forests for 2,600*l.* Mr. Byrne was the builder.

This congregation was first known in 1640, under the name of the "Westminster French Protestant Church," composed of merchants already established in London, and of refugees driven from their country by religious persecution. This church, it appeared, conformed to the discipline, and adopted the liturgy (translated into French) of the Church of England in the year 1661, when it was placed under the jurisdiction of the Bishop of London and the Archbishop of Canterbury, and obtained from Charles II. possession of the chapel of the Savoy, together with an annual stipend for its "preaching minister." Since that period the congregation has been subject to various vicissitudes, having been obliged to remove, first to a chapel in Spring-gardens, and to the Greek Church in Crown-street, and afterwards to a very humble chapel in Edward-street, Soho-square, from whence they will come to the new building in question, which is dedicated to St. John. The foundation-stone was laid on the 2nd of January last.

We have not yet examined the building.

ARCHÆOLOGICAL INSTITUTE.—At a recent meeting of the committee it was announced that the Archbishop of York had consented to be the patron of the next meeting, and that Lords Morpeth and Carlisle had accepted the office of vice-presidents on that occasion. The following foreign honorary members have recently been admitted:—H. A. J. Arwidsson, president of the "Suenska Fornskrift Sällskapet," librarian-in-chief of the Stockholm Library; D. Thom, Esq., one of her Majesty's Consuls in China; the Chevalier Edouard Gerhard, Berlin; Dr. Theodor Panofka, professor of Archæology, at Berlin; and the Comte de Laborde.

WESTMINSTER COURT OF SEWERS.

The first meeting of the Court for the year 1846 took place on Friday, the 2nd instant. Captain Bague was voted to the chair. The collectors' reports were received. The cash at the bankers was declared to be 15,388*l.* 6s. 10*d.* The officers' salaries to Christmas were paid, 642*l.* 10s.; and after some routine business, the great feature in the first Court in every year, for many years, was commenced:—

No. 8, on the business paper, "Annual Nomination of Chairman to take place between the hours of two and three o'clock. In consequence of the retirement of the present chairman, the proposition of another commissioner or commissioners for the office must be then made, and a subsequent day fixed upon for deciding the appointment."

Mr. Knight, of Sloane-street, proposed Capt. Bague, R.N.; but the gallant officer immediately declined being put in nomination. No other person having been proposed, the office of annual chairman to the Westminster Commission of Sewers is now only a matter of history. A committee of accounts for the year was then proposed by Mr. Hawkes, consisting of Mr. Henry Harrison, Mr. Bathurst, Mr. Baylis, Mr. Knight, Mr. Biffin, and himself.

After considerable opposition, the committee was appointed. Mr. Le Breton's motion to increase the salary to the proposed new surveyor to 600*l.* per annum was, after much discussion, adjourned; the Court considering that Mr. Le Breton should define the duties, and settle the salary after, rather than arrange the salary first, leaving the duties to be performed an after consideration.

Court adjourned to Friday, the 9th instant, at eleven, special, to swear a jury; "To inquire into such things as shall be given them in charge, and to present what houses, lands, and tenements are benefitted by the new making, repairing, or cleansing the common sewers in the eastern division of the Westminster sewers, or that may receive hurt, loss, or disadvantage, by defect of new making, repairing, or cleansing such sewers; and also the annual rental value of the several premises, for apportioning, according to the interest of each individual, his due share of the expense appertaining to the sewage."

THE STATE OF THE SEWERS.

Sir,—It is to be hoped that you will give more information respecting the sewer in the New-road.* What is its size? What is its shape? What fall has it? How many gully-holes? How many inlets from house drains? In what way was the work performed in taking out the number of loads of deposit? What the particulars and total of cost?

Two deposit wells, each with a vessel or bucket to hold one load of deposit, if drawn up on an average once a month, might, in seven years, have prevented 168 loads entering that sewer. One deposit-well might be under the gully-hole, but the object should be to prevent the water falling too far at once, to prevent it stirring up the deposit. Above each deposit-well should be a shaft with a cover. From the side of the shaft, the water, when the well is filled to the proper height, should pass through a grated opening into the sewer. Through a hole in the cover of the shaft, by means of a rod or wire, the depth of the deposit in the bucket may at any time be ascertained. When full, or on proper occasions, the bucket with its contents to be drawn up, emptied, and replaced. This work, with proper apparatus, may be done in a few minutes.

Would it be wise to try to force all the silt, &c., from the New-road to the Thames?

Whatever form a sewer has, would it not be economy to proportion the quality and substance of the material, so that all parts should be as nearly as possible equally durable?

A Looker-On.

*** We printed a series of questions relative to sewers a short time ago, it will be remembered, which were furnished by the same intelligent writer. In reference to one of those questions, a correspondent says:—

"There can be no doubt of the advisability of carrying gas and water mains *through* the sewers, which should be built sufficiently capacious for the purpose: this would prevent the disturbance of the streets upon the first laying of the mains, and remedy the justly complained of evil of the continued opening of the ground to carry out repairs and alterations, and would afford the means of their being at all times open to inspection, and prevent the very great loss from leakage that the companies at present labour under. And this accommodation would be accompanied by a great saving of expense; in return for which, the gas and water companies should pay a rental, and this, I have no doubt, they would most readily do. A patent, now expired, was taken out by a gentleman of the name of Williams, who spent a large sum of money in endeavouring to bring it to bear. It was for the purpose of forming sub-ways in the streets of London; the lower portion forming the sewer, and the upper being arranged for the reception of gas and water pipes. But this, although acknowledged to be a great good, was prevented from being carried out by the great expense that would be incurred, as the sewerage was already arranged. Where this is not the case, this plan should be adopted, and benefit to all parties would be the result. The papers, drawings, and data connected with the patent are, I believe, in the possession of Mr. John Williams, of 29, Bucklesbury, who, I have no doubt, would be very happy to give any information required on this subject, and which is worthy of serious consideration.

I am, Sir, yours, &c. T. A. H.

Brompton.

* See p. 620, Vol. III.

ARCHITECTS' CHARGES AND RESPONSIBILITIES.

Our recent remarks on this subject have led several architects to forward us opinions and items of information in connection with it, and of these we shall hereafter make use.

Mr. George Wightwick, of Plymouth, having on several occasions found objections raised to the payment of commission, has printed a letter, which he places in the hands of those parties who apply to him. This letter views the question of responsibility broadly, and being very suggestive, we are led to think the publication of it will be useful to the profession.

"To prevent misunderstanding, as to the nature and extent of my responsibilities, in accepting the honour of your employment, I beg leave, very respectfully, to solicit your kind attention to the following:—

It is presumed your primary object in securing the services of an architect involves the recognition of his pretensions as an artist. The ordinary *builder* may construct the edifice required: you apply to an *architect* for the superadded graces of correct design and suitable decoration.

Secondly, you desire his experience and ingenuity in respect to *convenience;* to be shewn in such a compact and uniform arrangement of plan, as will prove strictly conformable to beauty of elevation, and pervading architectural propriety.

Thirdly, you employ him to afford the drawings and specifications necessary to arrive at the cost of your proposed building, and to make the best of his allowed conditions, so that, if you cannot have all you desire, you may have as much as your means will allow.

Fourthly, you engage him to supply all such *working drawings* and *occasional* superintendence, as shall insure the accurate and substantial execution of the works, so far as regards their *architectural truth* and permanent *strength*.

Fifthly, you require him to control the builder's claims upon you for payment, and to adjust all variations in the cost, induced by deviation from your first intentions.

Such being the architect's duties, he next submits to your timely consideration his exemption from certain liabilities too frequently supposed to attach to him.

1st. In matters of taste. He engages to give you what he conceives to be correct, and to the amount only which your means allow, and *not* to sacrifice, without reluctance, his repute as an artist to your individual wishes, nor to suffer under your censure for limiting his decorations to their just proportion in the general outlay.

2nd. *Convenience.*—Any partial disarrangement of the plans, first mutually agreed upon, releases him from the censure which may afterwards attach to them as a whole. It is a common error to regard as trivial, alterations which seriously affect the entire design.

3rd. *Estimates.*—He does *not* engage to make out, under your own directions, a design, the execution of which shall be within the limits of your intended outlay. All he can safely do is to learn what you require, and how you desire it to be done; and then, by measure and value, to inform you of the cost. He will *not* pledge himself to any particular amount: nor will he admit, as at all applying to himself, those imputations of *excess*, which too frequently follow where employers, by almost imperceptible degrees, enlarge upon their original instructions.

4th. *Superintendence.*—The architect is *not* employed as an operative builder or clerk of the works. It must be clearly understood, that his *occasional* visits and *working drawings* can only have reference to architectural accuracy and the liberal fulfilment of the leading articles of the specification, as affecting construction *generally*. If the builder, his foreman, or operatives be careless, and a competent clerk of the works be not engaged, roofs may leak, plumbing may partially fail, plastering may crack or become discoloured, drains may yield offensive odours, joinery may shrink, chimnies may return their smoke (indeed the latter nuisance may occur in spite of all precaution) and many other evils may shew themselves, without, necessarily, impugning the character of the architect, or in the least affecting the general stability of the structure. The most trying annoyances may originate in the most trifling defects of workmanship, and nothing short of a vigilant clerk of the works, exclusively employed without intermission, can insure perfection in matters of constructive detail.

5th. *Settling accounts.*—It is common for the architect to be equally beset by his employer and the builder; the one complaining of too great allowance, the other of too little. The architect does not engage to please either.

Terms.—Five per cent. on the outlay; travelling expenses; and the value of time occupied in travelling, reckoned at three guineas per diem. Expenses and value of time *shared* between different employers residing on the same line or in the same vicinity. But any fixed terms have reference to the unaltering progress of the employer's first settled determination; so that all subsequent deviations from the course which has been followed in strict obedience to instruction, will involve an extra charge proportionate to the extra time employed.

Again, these terms will not hold good in certain cases where *old* buildings are altered, or where the work involves a smaller outlay than will compensate (at the usual rate of per centage), for the time employed. In the former case, the labour of surveying the old structure, and of taking plans, elevations, and sections of the same, may require remuneration apart from that which is charged on the new building; and, in respect to works of small outlay, where much taste or economic management is required, the charge can only be justly regulated by the value of time.

It must be considered, that the labour of an architect frequently bears a ratio inverse to the amount of expenditure. In a large building, constructed under liberal circumstances, he charges 5*l.* for every 100*l.* well *expended;* in a small one, erected under very limiting injunctions, he may deserve 5*l.* for every 100*l. saved.* He is bound, in common honesty, to keep down the cost in the first instance; but, if further reduction be necessary, it is surely too hard to expect from him, unrequited, that additional trouble which reduces his per centage.

Should the foregoing be admitted as reasonable, I am ready to devote my best skill and care to your service."

New Lunatic Asylum for the County of Surrey.—At the Surrey General Quarter Sessions, held last Monday, in the Sessions House, Newington, Mr. Freshfield brought forward a motion relative to the necessity of providing an additional building for the pauper lunatics of the county. It appears that the present asylum is capable of accommodating only 400 patients, and that room is required for 700. The sum of 200,000*l.* is spoken of as being the probable cost of the proposed new building.

THE SMOKE ELEVATOR.

The accompanying cuts explain the construction of a little machine registered by Mr. Rickets, of Agar-street, Strand, for the cure of smoky chimnies.

Fig 1, front elevation; fig. 2, side; and fig. 3, section, of apparatus. AA is a flat iron pipe to be passed up the chimney through an iron plate, to be placed across the throat of the chimney, or through a hole cut to the size of pipe in the fall down back, if a register

Fig. 3.

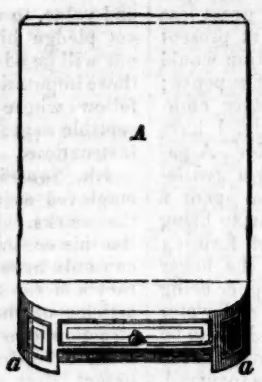

Fig. 1.

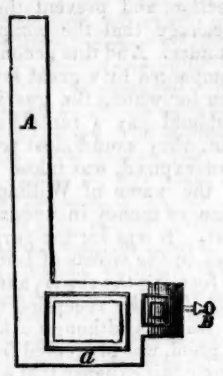

Fig. 2.

stove. BB is a sliding plate, by means of which the draught may be increased, or decreased.

In one case where we saw it used, it seemed to answer the purpose extremely well, and as it is simple and inexpensive, and can be applied without difficulty or disfigurement, some of our readers may be glad to have it made known to them.

INTERMENT IN TOWNS.

"The interment of the perishing remains of the dead in the midst of the close and crowded streets of densely peopled towns," says the *Provincial Medical and Surgical Journal*, "is one which daily acquires more claims to consideration. The sepultural indecencies exposed by Mr. G. A. Walker, the indefatigable author of "Gatherings from Grave Yards," and other similar publications, and the extraordinary nature of some of the proceedings in the London burying grounds, which he has brought to light, are almost incredible. Yet, although perhaps in a minor degree, they find their parallel in provincial towns.

Mr. Walker remarks in a later work:" The celebrated Bunhill Fields, City Road, was originally opened as a burying place in the year 1665. It contains about seven acres. It is supposed that considerably upwards of one hundred thousand interments have taken place in this ground, and that one million of pounds sterling have been derived in fees, &c., from the burial of the dead."

From a statistical account of burials within the walls of the city of Norwich, now before us, to which we refer as having been very lately compiled by Mr. Crosse, for the purpose of elucidating the question under consideration, it appears that the yearly average of burials in that city, during the last ten years, has been 1269. The extent of the church-yards, including the ground on which the churches (thirty-five in number) stand, foot-ways, &c., is little more than twelve acres and a quarter. It would be easy to show from an examination of the extent of the individual burial-grounds, that the annual number of interments is in very many instances at least double, and in some, three and four times the rate mentioned by Mr. Walker as allowable.

The Bunhill Fields burying ground mentioned above, contains, it is stated, about seven acres, and Mr. Walker calculates, that from the year 1665, a period of one hundred and eighty years, upwards of one hundred thousand interments have taken place there. Now, making the allowance we have indicated for the space otherwise occupied, the aggregate of the Norwich burying grounds, will probably not much exceed the Bunhill Fields in extent. The number of burials in the Norwich church-yards, within the walls, during the last ten years, was 12,691. What has been the amount during the period of time (one hundred and eighty years) that the Bunhill Fields ground has been opened? The answer would probably show, that the abuses pointed out as occurring in the metropolis, will be equally apparent here.

It has been observed on a former occasion, that the public attention seems alive to these evils when once properly pointed out; but there is much reason to suppose that very many of our large provincial towns are similarly situated in this respect to Norwich, and some of them in a far worse condition. We know of no more acceptable service that could be performed by those who have the required time and opportunity, than the collecting of information on this subject in country districts. Mr. Walker's researches upon the burial grounds of the metropolis will form an admirable guide to any one who may be disposed to take up the inquiry elsewhere, and Mr. Crosse's success at Norwich a sufficient encouragement."

WEIGHT OF IRON BOLTS AND NUTS.

Sir,—Not having seen in any work on engineering a similar table to the following, wherein the exact weight is given of those bolts and nuts generally used, and feeling assured that in many instances it would prove practically useful to young men when estimating, I have calculated, and beg to forward the same for insertion in The Builder if it meet with your approval. I am, Sir, &c.

F. Mulholland.

15, Ward-street, Lambeth.

Diameter of bolt.	Weight of 1 foot of round iron.	Weight of 1 inch of round iron.	Weight of nut.	Weight of head.
Inches.	lbs.	lbs.	lbs.	lbs.
¼	0·2	·016	·021	·021
⅜	0·4	·033	·062	·062
½	0·7	·058	·145	·145
⅝	1·0	·083	·26	·26
¾	1·5	·125	·468	·468
⅞	2·	·166	·729	·729
1	2·7	·225	1·125	1·125
1¼	3·4	·283	1·77	1·77
1½	4·2	·35	2·187	2·187
1⅝	5·	·416	2·86	2·86
1¾	6·	·5	3·75	3·75
1⅞	7.	·583	4·74	4·74

IMPROVEMENT OF THE CITY.

At a late meeting in Cordwainers' Ward, Mr. Lott took occasion to allude to a matter of great interest to the citizens of London, and which he trusted the influential press of London would continue to notice until its accomplishment should be effected—namely, the resolution of the Court of Common Council to expend the sum of 20,000*l.* annually upon City improvements. The attention of the citizens should, he said, be expressly devoted to that subject, as he feared some of the projected improvements were not of a very eligible description. Of those improvements which had been completed, Gresham-street was anything but satisfactory, for, although probably interesting to the antiquarian as a restoration of Crooked-lane, the aforesaid street led to nothing, and came from nowhere. It was now proposed to form a magnificent street to Lincoln's-inn-fields from Cheapside. Such a scheme he could not consider judicious, as it would constitute the formation of a third inlet of traffic into a street already immensely crowded. Another important question under discussion in the corporation was, the formation of railway termini within the City. He considered the granting exclusive accommodation in this respect to the directors of the Direct Manchester line an unfair privilege. In his opinion, all the railways ought to be accommodated; but as the site of Farringdon Market or the Fleet would be far too small for them, and the intersecting great public streets would be prejudical to trade, he thought a spacious and convenient terminus might be made on the north side of Holborn from a viaduct from one hill to the other, thus getting rid of much obnoxious property, now known as Field-lane and the neighbouring steeets.

New Books.

The Laws relating to Buildings: and a copious Glossary of technical terms peculiar to building. By T. Chambers, barrister-at-law, and Geo. Tattersall, surveyor. Lumley, Chancery-lane. 1845.

This very useful volume comprises the Metropolitan Buildings Act, the laws relating to fixtures, insurance against fire, and dilapidations, actions on builders' bills, and a glossary. As the Preface says:—

"Its effect is directly practical, and the selection and arrangement of the materials have been governed accordingly; everything not of immediate utility having been rigidly excluded, with a view to bring prominently forward the most intelligible and popular explanation of the law; avoiding, as far as practicable, all expressions which are technical, or abstruse, and therefore difficult of comprehension to the unprofessional reader."

The section on dilapidations is discriminating and clear. It is to be regretted that it contains a sweeping condemnation of the report on dilapidations published by the Institute of British Architects,—a condemnation in no way authorised by the evidence adduced.

The following extract forms the introduction to the section, "Actions on builders' bills."

"Two main causes unite to produce frequent disputes relative to builders' bills. Of these, the chief is to be found in that continual struggle of competition, which, pervading every trade, causes the employer to beat down the builder below a fair price,—whilst, on the other hand, it induces the contractor to keep in the back-ground many items which must eventually come forward. The other is the natural consequence of those accidents and chances attendant upon all building transactions, which make the slightest deviation from the original plan, the source of many heavy,—and we must add frequently groundless—charges by the contractor, under the head of "extras."

A third, but comparatively insignificant source of contention is to be found in the architect's specification. To any person who will consider for one moment the multitude of provisions to be made in the erection even of an ordinary dwelling-house,—the intricacy of their nature, and the almost trifling minutiæ of their arrangement,—it cannot for a moment appear extraordinary that some few items should escape his notice. Indeed the wonder would seem rather to be that so many are carefully remembered, than that a few should be forgotten.

From which soever of these causes disputes between the contractor and his employer originate, their nature is almost invariably the same,—they are points of construction, not matters of fact. In other words, the question at issue is not one of workmanship, nor of price, but whether the subject of extra claim forms a part of the contract or not.

All specifications have a schedule of conditions annexed, which after alluding to the completion of the works, payment of the money, &c., usually contains a clause to the following effect: "and also, that if the description of any thing necessary to complete the said works according to the design expressed in the drawings, or in the foregoing specification, or to be understood by fair inference therefrom, be omitted in the said specification or drawings, the contractor shall take no advantage of such omission or omissions, but shall supply whatever may be needed to complete the whole without any additional charge."

It is evident to the dispassionate reader of such a condition as this, that it is intended to supply any trifling omissions on the part of the architect; such omissions being actually necessary to complete work directly specified to be performed; but, as we have already stated—it is on this point that the disputes turn, and with reference to their several readings of this clause the contending parties usually join issue.

Much, however, of this old-fashioned disputation has been avoided by the modern method of practice adopted in the contracting for any public or private building of more than ordinary dimensions, or in the erection of which such questions are likely to arise. In such cases two surveyors are appointed, one on behalf of the architect, the other on behalf of the builder; and these surveyors conjointly form a bill of quantities of work to be done. The work having been executed, the same surveyors —having previously named a referee in case of questions arising as to quantities or price—proceed to measure the extra work not provided in the contract; and according to their report, or that of the referee in case of a difference between them, the builder's bill is settled.

It may be said that this course of proceeding does not shut out the great source of contention; viz, the construction of the conditions; at the same time it must be obvious that it so contracts its limits as to leave but little room for litigation, where parties are really anxious to avoid it.

It must be also borne in mind that builders' bills are more usually made matters of reference than of law, and this will account for the paucity of recorded cases on the subject. On perusal of the New Buildings Act (7 & 8 Vict. c. 84), it will be seen that all questions relative to the building of party-walls are submitted to the final jurisdiction of the official referees appointed by the Act. The judges, too, have almost uniformly adopted the practice of submitting such subjects to a reference, even when brought into court—and in this they have exercised a wise discretion, since the technicalities and intricacies of building are utterly unintelligible to the most erudite of juries."

We have extracted this passage, because it suggests for consideration several important points of practice.

The glossary of technical terms relating to buildings, consisting of forty pages, is made very clear by the means of occasional illustrations.

Correspondence.

GENERAL CONTRACTORS.

Sir,—It is the opinion of many persons fairly interested therein, that the "great undertakers" are not doing various trades in the building line *all* the *justice that is their due:* perhaps you will allow me a place in your valuable publication for a few plain words on this subject.

I think, Sir, there is a strange difference in the amounts for which the *omnium gatherum* firms offer to complete great works—and the cause appears to me to lie in the talents of the subordinate agents of these contractors, in superinducing the necessary tradesmen to execute the work for them at the lowest possible rates, and the subsequent counting-house management, to get cash for work and other mens' goods and labour, and then to take 6 and 12 months from the various tradesmen, and give bills at 2 and 3 months' date: this makes a very large advantage in serious amounts, and the screw principle can be applied very dexterously and sharply too by some dispositions.

If the main trades contracted each for its own calling, as the mason, and bricklayer, the plumber, the painter, and glazier, the smith, the plasterer, and tiler, &c. &c., the work would be done much better, and the proper people would get their fair due, and not most of the profit be absorbed by these "men of all trades." Besides, any talented man of each trade would sooner become known for his ability, to architects and others, and would not then remain his best days a journeyman, without opportunity of shewing his worth and obtaining his reward as a master in his trade.

I am, Sir, &c. O. O. O.

Furniture Wood.—The Lords of the Treasury have, during the past week, given permission for "purple wood," a product of Bahia, to be imported duty free.

Haley's Patent Lifting Jack.—This is a most important improvement on the old rack jack for lifting great weights, supporting beams, &c., in buildings undergoing alteration, and, from its simplicity, power, and economy in first cost, must come into very general use, if not entirely supersede the old and rude rack jack. Instead of a rack with ratchet wheel and pinion, in the one to which our notice has been directed, a powerful screw runs perpendicularly through the frame, having a claw at both top and bottom, so as either to raise the weight from above, or lift from below; this screw is acted upon by a pinion taking into an endless screw, on the axis of the handles outside the machine, by which means a most enormous power is obtained with comparatively little labour: the handle may, at any time, be left without a possibility of flying back, and is only half the weight of an ordinary jack of equal power, one capable of lifting five tons can be borne with ease by one man. All its working parts are most accurately finished, being engine cut, and it combines utility, safety, durability, and neatness at a cost not exceeding that of the old and unsafe jack. It is manufactured solely by Messrs. Galloway, Knot Mill Iron-Works, Manchester.—*Mining Journal.*

MEETINGS OF SCIENTIFIC BODIES.

During the ensuing week.

Monday, Jan. 12.—British Architects, 16, Grosvenor-street, 8 p.m.

Tuesday, 13.—Civil Engineers, 25, Great George-street, 8 p.m. (Anniversary.)

Wednesday, 14.—British Archæological Association (Western Literary Institution), Leicester-square, 8½ p.m.; Graphic, Thatched-house Tavern, 8 p.m.

Thursday, 15.—Royal, Somerset House, 8½ p.m.; Antiquaries, Somerset House, 8 p.m.

Saturday, 17.—Asiatic, 14, Grafton-street, 2 p.m.

Tenders.

For the contract of works to be done in building a new school and dwelling-house, with appurtenances, near Maidenhead, Berks; for Mr. J. D. M. Pearce, from drawings, and under the supervision of Mr. J. Tarring, architect.

Cooper and Davis	£2,000 0
Cox	1,964 0
Gerry	1,936 0
Plowman and Luck ..	1,932 0
Crowhurst	1,827 0
Cooper	1,776 10
Mathews	1,728 0
Cooper	1,705 10
Mason	1,644 0
Wells	1,624 0

For the rebuilding, &c., of Portman Market, Paddington; Mr. Bush, architect, Hay's-place, Lisson-Grove.

Grove	£2,167 0 0
Higgs	1,917 0 0
Thomas	1,692 11 2
King	1,425 0 0
Williams	1,200 0 0

*** How is this frightful difference to be explained?

NOTICES OF CONTRACTS.

[We are compelled by the interference of the Stamp Office to omit the names of the parties to whom tenders, &c., are to be addressed. For the convenience of our readers, however, they are entered in a book, and may be seen on application at the office of "The Builder," 2, York-street, Covent-garden.]

For the supply of 150,000 sleepers to the Midland; Nottingham and Lincoln; and Peterborough Railways.

For supplying and laying down in the parish of Woolwich, Kent, certain quantities of curb and Rock Hill stone.

For the execution of works on the North Wales Railway.

For the supply of 60,000 Memel, red pine, or hacmatac sleepers, and 12,000 larch, hacmatac, or pine, according to specifications, for the Dublin and Belfast Junction and Navan Branch Railway.

For the execution of works on the North Wales Railway, viz. from the Bangor Station to the Carnarvon Station.

For the execution of works on the Leeds, Dewsbury, and Manchester Railway, viz.: the Dewsbury Contract, in length about 3½ miles.

For the erection of a New Church at Pembury, Kent.

APPROACHING SALES OF WOOD, &c.

BY AUCTION.

At Orwell works, St. Clements, Ipswich: a large quantity of oak, teak, and fir slabs and listings, and a variety of oak, elm, teak, and fir scantling.

On the Ellingham Hall estate, near Bungay: 100 very useful ash and elm timber trees; 50 excellent poplar and willow trees; 300 capital larch, Scotch, spruce, and other fir trees, &c.

At Novar Ross-shire, upwards of 10,000 Scotch fir timber trees; all fit for railway purposes.

At the George-inn, Ilminster, 930 very fine maiden oak, elm, and ash timber trees; also, 1,000 useful ash, oak, and other saplings and poles.

At Eling, near Southampton, 87 prime oak timber trees of large dimensions and exceedingly sound.

At the Griffin-inn, Amersham, Bucks, 670 beech, 25 ash and 4 sycamore trees of very superior growth and quality, and of large dimensions.

On the Kennet Estate, near Newmarket: A large quantity of very superior oak, ash, elm, and poplar trees, &c.

At Gamlingay, Cambridgeshire: 40 very prime oak trees, and 60 pollards, now standing.

TO CORRESPONDENTS.

"C. Newnham."—*We shall avail ourselves of some of the remarks, although we are unable to print the letter.*

"G. F."—*The type was unfortunately distributed before his letter reached us.*

"J. W."—*It is difficult to avoid what he complains of. We are thankful for his good opinion.*

"P. F. P."—*Dry, hard oak should be used for trussing girders.*

"J. K." *will see on consideration, that the point is, to delineate the egg when you have it.*

"*Abbey of Athenry,*" *next week.*

"J. P." (Shrewsbury).—*The drawing sent is not sufficiently interesting to induce us to engrave it. We shall be glad to hear from* J. P. *again.*

"A Regular Brick."—*We will give the subject consideration. Our own experience hardly bears out his statement. We find it is difficult to obtain a drawing clerk at a moderate salary.*

"Youngster."—*We are not acquainted with the party named.*

"Pile Dam."—*A correspondent asks the exact meaning of the term* "Sheet Pile Dam." "*It is contended,*" *he says,* "*by some*; 1*st, that a sheet pile dam cannot be constructed of whole timber* (*at least that the term is not applicable to one so constructed*). *And* 2*ndly, that when a dam has a dwarf dam in front of it, it cannot be fairly denominated a sheet pile dam. On the other hand, it is urged that a* close *dam* (*though not grooved and tongued*), *with the seams between the piles caulked, in whatever position it is, whether assisted by a dwarf dam or otherwise, fairly constitutes a sheet pile dam, whether it be of half or whole timber.*"

"B. B."—*We shall be glad to receive his promised communication.*

"J. G."—*In justice* B. *should pay part of the expense. Legally, however, if the alteration was made without his concurrence, the claim could not be maintained.*

"F. C."—The Farmers' Insurance Company, Strand, *insure against storms.*

"Stoving Wood."—*Two correspondents wish to know the best apparatus for stoving wood.*

"Friend to Builder" *will find some information on the subject of reservoirs in present No. Without knowing where it is to be placed, and other circumstances, it is impossible to advise usefully.*

"A. P."—*Whatever is submitted to us shall receive consideration.*

"H. S."—*We shall avail ourselves of the materials kindly forwarded.*

"W. D."—*We are much obliged. We wish he would favour us with some remarks in a connected form. The result of his experience would be valuable.*

"Building over Passage."—*A. may do what he pleases on the upright of his own soil, if not to the injury of his neighbour.*

"W. W."—*A letter addressed to the Eastern Counties Railway Office, will find the gentleman named.*

Received:—"C. & Son;" "T. P.;" "L.;" "Return of Patents taken out in Ireland" (Mr. Telford); "Old England," Index, &c. (Knight); "Pictorial Gallery of Arts," Part XII.; "Old English Worthies," Part I (Knight); "Post Magazine Almanac for 1846;" "Dolman's Magazine;" "Proceedings under the Metropolitan Buildings Act" (Weale).

*** Correspondents are requested to address all communications to the Editor, York-street.

ADVERTISEMENTS.

PROFESSOR KELLER'S POSES PLASTIQUES.

ROYAL ADELAIDE GALLERY.—This day, and during the week, Professor Keller will exhibit at the Adelaide Gallery his Grand Tableau Vivans from the Ancient Masters, which have received so largely the encomiums of the press. Every morning at half-past three, and in the evening at nine o'clock. Great efforts have been made to add to the effects of this exhibition. A variety of new subjects have been added to those already presented to the public The Concerts as usual. Also Pilbrow's Atmospheric Railway model, with explanatory lecture.

FURNITURE PURCHASED in any quantity.—Parties rebuilding, improving or changing their residence and having surplus property of this description to dispose of will avoid the trouble and expense of selling the same by auction, by application to Mr. JOHN CHAPMAN, No. 6, Great Russell-street, Covent-Garden. The quality immaterial and the cash paid before removal.

To Stove, China, and Stained-glass Manufacturers, Iron Founders, Statuaries, Cabinet Makers, Upholsterers, and others.

H. WHITAKER begs to inform his Friends and Connections, and Manufacturers in general, that he has REMOVED to 14, HILL STREET, MONTPELIER SQUARE, where he continues to make Practical Designs and Drawings.
N.B. An Indoor Pupil wanted.

TO ARCHITECTS, BUILDERS, & BRICK MAKERS.

PUMPS of Superior CONSTRUCTION, bored perfectly true by improved machinery, in various plain and ornamental patterns for Conservatories, Squares, Market Places, Roads, Gardens, and for Liquid Manure. BRICKMAKERS' PUMPS, in Wrought and Cast Iron, HYDRAULIC LIFT PUMPS, and ENGINES for Wells of any depth. SINGLE and DOUBLE PUMPS up to 12-inch bore, kept for Hire.
BENJ. FOWLER, 63, Dorset-street, Fleet-street.

PUBLICATIONS.

PAINTING, SCULPTURE, ARCHITECTURE, ENGRAVING, &c. &c.
Containing 28 pages of 84 columns. Extensively illustrated. One Shilling Monthly.

THE ART-UNION: Monthly Journal of the Fine Arts; the Arts Decorative and Ornamental; and Record of British Manufactures. Established in January, 1839.

To MANUFACTURERS, Decorative and Ornamental Designers, their Employers, and Artisans, and all who are interested in improving the Useful Arts by subjecting them to the influence of the Fine Arts, the ART-UNION Monthly Journal is recommended as supplying such practical information as may enhance the mercantile value of the various productions of British industry. In order to communicate facts so as to render them available as suggestions to the producer, the several articles are illustrated by explanatory Woodcuts. Thus, papers have been published with a large number of illustrations, on Cotton-printing Paper-staining, the Varieties of Lamps and Candelabra, the Manufacture of Porcelain, &c. &c.; and others are in preparation addressed to every trade in which taste can be brought to co-operate with the artisan; and the mercantile value of the Useful Arts be augmented by the aid of the Fine Arts.

The ART-UNION Journal, as its name imports, was instituted mainly to enforce the necessity of Union between the different branches of Art, and more particularly the intimate connection that exists between those Arts which have been regarded as entirely artistic, and those which have been deemed exclusively mechanical; the purpose being to shew that mind as well as hand is required in every branch of Ornamental and Decorative Art. The publication, therefore, is recommended to the attention of persons interested in the cultivation of the arts of Decoration and Ornament—in the furnishing of houses with taste elegance and judgment; and in the introduction of improvements in designs for British manufactures—from articles of high importance to the most trifling matters in general use, which may be made subservient to the judicious education of the eye and mind—a work in which every manufacturer is unconsciously taking an active part, and which he either advances or retards, more or less, by every article he multiplies and circulates among mankind. Thu we shall endeavour to give publicity, as far as our influence extends, to any improvement introduced into the external form and character of articles of British manufacture. The supremacy of our manufactures has, indeed, been long maintained, and is universally acknowledged on the Continent. While, however, the foreign producer admits our superiority in the very essential points of substance and durability, he generally refers with mingled triumph and scorn to the forms of our productions. Hitherto his sarcarsms have been sufficiently just; but a time is approaching when we shall surpass the foreign competitor in design as much as we have hitherto excelled him in material.

In pursuance of our plan, therefore, we shall notice every improvement in manufactured articles where the influence of the Fine Arts has been or may be exercised; and, wherever our notices seem to require the aid of explanatory woodcuts, such woodcuts shall be associated with them. We shall thus hold out a sure encouragement to improvement, in giving to such improvement that publicity which rarely fails to secure substantial reward: while, at the same time, recompensing the party improving by according to him that "meed of praise" for which all good men labour; and, above all, we shall thus stimulate others to improve likewise. Hitherto the manufacturer has had no medium by which he could make known the improvements in taste and external form to which his productions had been subjected; for the public journals—in Literature, Science, and Art—although reviewing largely and continually, published books and prints, have completely overlooked the silent but powerful instructors which emanate from the factories of Great Britain.

ILLUSTRATED TOUR IN THE MANUFACTURING DISTRICTS.
Preparing for publication, in the Art-Union Monthly Journal,
A TOUR IN THE MANUFACTURING DISTRICTS OF ENGLAND AND SCOTLAND:
Extensively illustrated by Woodcuts, exhibiting the progress of design in manufactures, picturing the various articles of recent produce which manifest improvement, and reporting the systems pursued in the principal English and Scottish factories:—those more especially of Manchester, Birmingham, Sheffield, Nottingham, Kidderminster, Stourbridge—the Potteries of Staffordshire, Worcester, and Colebrookdale—Glasgow, Paisley, Dunfermline, &c. &c.

PUBLICATIONS.

Just Published, and to be had for nothing,

A PAMPHLET on NERVOUS or MIND COMPLAINTS, with Cases and Testimonials. The nervous are invited to send to the Rev. Dr. WILLIS MOSELEY, 18, Bloomsbury-street, Bedford-square, for a small pamphlet, on his new and most successful Treatment of Nervous or Mind Complaints, by which he cures those diseases as certainly as water quenches thirst.
N.B. One stamp, if sent, would prepay the postage.

In 12mo. price 4s. 6d., bound,

PROCEEDINGS under the METROPOLITAN BUILDINGS ACT: containing a collection of Awards made by the Official Referees; the Modifications sanctioned by the Commissioners of Works, &c.; and some account of the Office established under that Act. Digested and arranged by EDWARD LAWES, Esq., of the Middle Temple, barrister-at-law.
JOHN WEALE, 59, High Holborn, 1845.

Just published, a New Edition for 1846, price 4s.

LAXTON'S BUILDERS' PRICE BOOK, containing 11,000 Prices and Memoranda connected with Building, and the whole of the Metropolitan Building Act.
J. WEALE, High Holborn; SIMPKIN, MARSHAL, and Co., GROOMBRIDGE and SONS, and SHERWOOD and Co., Paternoster-row.

NOTICE TO INVENTORS.

OFFICE for PATENTS of INVENTIONS and REGISTRATIONS of DESIGNS, 14, LINCOLN'S-INN-FIELDS.—The printed Instructions gratis, and every information upon the subject of PROTECTION for INVENTIONS, either by Letters Patent or the Designs Act, may be had by applying personally, or by letter (prepaid) to Mr. Alexander Prince, at the office, 14, Lincoln's-inn-fields. Where may be had, price 12s., or, through any bookseller in the United Kingdom, of Wm. BENNING and Co., law booksellers, 43, Fleet-street, the LAW of PATENTS and REGISTRATIONS, with all Forms and Cases up to the present time, by SIDNEY BILLING, Esq., barrister-at-law, and ALEXANDER PRINCE, of the Office for Patents, 14, Lincoln's-inn-fields.

DAY'S PATENT WINDGUARD, for ventilating churches, hospitals, factories, theatres, breweries, malt-houses, club-houses, shops, bed-rooms, smoking-rooms, school-rooms, nurseries, stables, larders, kitchens, offices, ships, mines, vaults, tunnels, &c. Also for preventing down draft; and is guaranteed to cure all smoky chimneys caused by wind; and entirely supersedes the use of revolving cowls, or any thing moveable or unsightly on the tops of chimneys or ventilators.

The object of this invention is to create a draft where otherwise it would not exist, by the spontaneous action of the external air. The Windguard forms a pleasing octagonal pillar, and by its peculiar construction to carry out the principle on which it is based, which consists of the wind giving a disposition for a vacuum within, thereby causing a continual upward current about equal to the velocity of the wind at the time acting upon it, which averages about six feet per second thirty days out of thirty-one; therefore, will nearly at all times ensure a continual change of air, being no impediment to spontaneous ventilation, even on a perfectly calm day. One five feet square will ventilate a building containing upwards of 1,000 persons. The Windguard applied to ships and steam vessels, in the form of a sky-light, prevents rain or the sea entering within, however boisterous the weather may be, thereby affording excellent ventilation as well as light. The Windguard is simply applied for effectually ventilating bed-rooms, nurseries, smoking-rooms, offices, &c., causing the air of the apartment to be at all times as pleasant as can be desired. It is fixed at the top of the chimney, in addition to which a cast-iron frame and valve (about one foot area), made to open and shut at pleasure, is let into the flue, near the ceiling of the room, to allow the constant ascending vitiated air being immediately carried off. The opening is guarded by a neat venetian blind or grating; and so powerful is the effect on a windy day that if a handkerchief be thrown up to the grating, it will remain there—i. e. if the valve be open. In winter the valve would be only partially open, to allow the smoke to ascend, but if the room be found too cold can be entirely closed. The Windguard applied to the tops of chimneys prevents all annoyance from smoke (caused by wind); indeed, where it does not, nothing else applied at top will (of the same size); care, therefore should be taken to have the proper size applied. It is simple in its application, reasonable in price, ornamental in appearance; no machinery or anything moveable in it, therefore, cannot get out of order: free from noise or any unpleasantness whatever; not liable to choke up with soot; no obstacle to the machines used for sweeping chimneys. May be had of all respectable ironmongers in town and country; and may be seen daily in operation, where its powers and usefulness are exhibited by the severest tests, at THE PATENT VENTILATING WORKS, COMMERCIAL-ROAD, PIMLICO, LONDON; where also may be seen Mr. G. T. DAY'S plans (illustrating the different applications of his Patent Archimedian Ventilator and his Portable Water Apparatus) for effectually Ventilating, Warming, and Cooling the Air of Buildings, Ships, Mines, &c. &c. By the use of these inventions many thousand cubic feet, or any quantity of pure warm or cold air, can be guaranteed to be continually exchanged per minute, day and night, winter and summer; thereby insuring, at all times, free ventilation to the rooms and passages of buildings, &c. from the basement to the roof, at the same time in such a manner as shall not be inconveniently perceptible. The size of the apparatus depends on the nature and use of the building and its occupants.

The Patentee has been honoured by his inventions being applied at the following places:—

Windsor Castle, Buckingham Palace, St. James's Palace, Claremont Palace, Walmer Castle, the Houses of Parliament, New Conservative Club, White's Club, Travellers' Club, Oxford and Cambridge, Parthenon, Wyndham, Army and Navy, Senior United Service, Junior United Service, Admiralty, British Museum, Somerset House, Custom House, Mint, Hon. Artillery Company, H. M. Salamander, Trinity House, Ordnance, Greenwich Hospital, Christ's Hospital, Westminster Hospital, Bethlehem Hospital, Surrey Lunatic Asylum, New Royal Exchange, Mansion House, Goldsmiths' Hall, Fishmongers' Hall, Haberdashers' Hall, Dyers' Hall, Grocers' Hall, Armourers' Hall, Weigh House Meeting-house, Hanover-square Rooms, Theatre of the Westminster Literary and Scientific Institution, Grand Cigar Divan, Strand, City Club, and many other Public Buildings in Town and Country, as well as to the Mansions of many Noblemen and Gentlemen. Licenses granted for Manufacturing the above. Drawings and Plans made for Ventilating and Warming Buildings of every description.

WILSON'S PATENT VENTILATING SPIRAL CHIMNEY POT, for the cure of smoky chimneys (manufactured by J. PORTER), is the ONLY article for the purpose which assists the draft of the chimney by an external propelling power. Upwards of fifty were fixed last winter on the chimneys of Buckingham Palace, and Windsor Castle, with great success. This Chimney-pot is not only the best and most effectual ever invented for the purpose named, but stands unrivalled in its ornamental appearance. The public may be supplied with the above useful article by any of the respectable ironmongers, or at the sole manufactory, Southwark-bridge Iron Roofing Works.

WESTBOURNE TERRACE TONTINE (Provisionally registered), in 3,700 Shares of 100*l.* each, Deposit 10*l.* The remainder to be paid by Monthly Instalments of 10*l.* each, commencing 1st March, 1846. Four per cent. allowed on payments in advance.

TRUSTEES.
George William Anderson, Esq., No. 69, Harley-street
Samuel Scott, Esq., No. 1, Cavendish-square
Charles Wardell, Esq., No. 43, Westbourne-terrace

COMMITTEE OF MANAGEMENT.
George William Anderson, Esq., No. 69, Harley-street (late of the Bombay Council)
Francis Edwards, Esq., No. 57, Westbourne-terrace
Edward Lambert, Esq., No. 4, Langham-place
George M. Murray, Esq., No. 6, Hereford-street, Park-lane
John Propert, Esq., No. 6, New Cavendish-street, Portland-place
Captain Reynolds, No. 23, Sussex-gardens (of the firm of Grindlay and Co.)
Charles Wardell, Esq., No. 43, Westbourne-terrace

BANKERS.
Sir Claude Scott, Bart., and Co., 1, Cavendish-square

SOLICITORS.
Messrs. Burgoynes, Thrupp, and Clark, 160, Oxford-street.

Westbourne-terrace is confessedly one of the finest ranges of buildings in the metropolis. Its proximity to Hyde-park and Kensington-gardens, great width, elevation, and gravelly soil, and the very elegant and commodious arrangement of the interior of the mansions present a combination of attractions which must render it a most valuable investment.

The property is held under leases of ninety-eight years, from Michaelmas, 1839.

It consists of seventy-three first-class Mansions, of which many are already occupied at good rents, and the whole range is to be completely finished, including fixtures, before the 25th December, 1846.

It is now proposed to constitute a Company for the purchase of the leases at the price of 370,000*l.* The report of Mr. Stevens, surveyor of the Royal Exchange Assurance Corporation, shows that at the estimated rental it will yield at least 5 per cent. to the Company. The report, as well as a lithographic view of the property, may be seen at the solicitors'.

It is also proposed, that the company shall be constituted on the principle of a Tontine. That principle may be shortly described as follows:—Each shareholder nominates a life in respect of every share. By the falling in of the life so nominated the share lapses to the company, so that the benefit of the fund is continually increasing to those whose nominated lives survive. Thus estimating the net rental of the mansions in Westbourne-terrace, to be included in the tontine at 18,000*l.* per annum, and presuming that at the end of a certain number of years three lives only survive, representing an equal amount of shares, the shareholders, whose nominees they are will take the 18,000*l.* per annum in equal thirds, and the last surviving life will be entitled to the whole for the residue of the ninety-eight years' lease.

By this arrangement the shareholders respectively receive a fair interest for their money, with the certainty of a continual increase. The investment is manifestly a most desirable one where the object is to secure a provision for a child or children, because by nominating such child or children there must necessarily be a good income for such as survive.

When the houses are all let at the rents respectively assigned to them, the net receipts will be about 26,569*l.* It is not intended, however, to divide in any one year the whole of the rental, but to form a reserve fund, to be distributed as a bonus amongst the survivors at the end of every seventh year, and a guarantee fund to meet contingencies, the ultimate balances of which funds will be delivered over to the last survivor, with the other property.

The proprietor of every share of 100*l.* will have the privilege of nominating one life at any time previous to the 24th December, 1846, and should the nominee die before that day, then another life may be substituted, so that all the subscribers may be on an equal footing on the 25th December, 1846, the day from which the rents will be receivable by the Company.

Two assurance societies have already offered to assure the lives of nominees of from five to twenty years of age at the moderate rate of 1½ per cent.

A proper deed of settlement will be prepared under the direction of the Committee, and settled by counsel, which will contain all necessary powers for regulating the constitution of the Company, and for enabling the proprietors at any time to dissolve the same and divide the proceeds.

The property will be conveyed to trustees, and the management of the affairs of the Company will be vested in a committee, to be chosen by the shareholders from their own body, one-third of whom will retire each year, and be re-eligible.

Application for shares must be made, in the under-mentioned form, and left under cover at the offices of Messrs. Burgoynes, Thrupp, and Clark, No. 160, Oxford-street. The houses may be seen by applying to Mr. Thompson, architect and surveyor, No. 2, Conduit-street-west, Hyde-park; or to J. Tippett, No. 34, Westbourne-terrace.

FORM OF APPLICATION FOR SHARES.

To the Committee of the Westbourne Terrace Tontine.

Gentlemen,—I request you will grant to me Shares of 100*l.* in the above Tontine, and I hereby undertake to accept the same, or any less number you may allot me, and to pay the deposit of 10*l.* on each share, and to sign the deed of settlement when required.

Dated this day of 1846.

Name in full.....
Residence.....
Profession.....
Reference.....